

SD5

PROPOSAL P301

PRIMARY PRODUCTION AND PROCESSING STANDARD FOR EGGS & EGG PRODUCTS

POTENTIAL HAZARDS IN THE PRIMARY PRODUCTION AND PROCESSING OF EGGS: GOVERNMENT AND INDUSTRY CONTROL MEASURES AND PERCEIVED GAPS.

September 2009

Potential hazards in the primary production and processing of eggs: Government and industry control measures and perceived gaps.

Step	Hazard	Control measure	Government legislation	Industry	Perceived
					gaps/comments
Bird Management	Microbiological contamination of eggs due to diseased birds	Hens sourced from hatchery are free of disease and purchased from an approved supplier.	 QLD includes bird receipt and bird management in the scope of the food safety program¹. Tasmania includes bird receipt and bird management in the scope of the food safety program. State and Territory legislation for animal welfare contains requirements that impact on bird health. 	Egg Corp Assured ² requires access to farm to be limited and cleaning and sanitising of vehicles and has requirements for maintaining bird health. AECL Code of Practice for shell egg production, grading, packing and distribution (AECL CoP) includes recommendations for purchasing laying hens from breeding flocks and hatcheries that are engaged in hygienic practices and implementing requirements to maintain bird health.	The hazards are adequately addressed by Qld and Tas legislation and industry schemes where implemented. The regulatory gap is in the remaining states and non- regulatory recommendations where businesses, mainly small businesses, have not implemented the industry programs.
				The Code of Practice for Biosecurity in the Egg Industry ³ includes measures regarding the entry of chicks, litter, equipment, vehicles, people and feed into egg production farms; the presence of wild birds and rodents in sheds or where hens and	The Biosecurity and Welfare Codes of Practice are voluntary guidelines which may or may not be adopted into State and Territory legislation, and if they are, they are done so

¹ Details of inclusions in the food safety program are in the Part 2 of the Food Safety Guide for Queensland's Egg Suppliers November 2007 (as recommendations).

² The measures in this column are based on those in the HACCP Audit Tables of Egg Corp Assured (ECA). ECA also includes a guide on good farming practices and a QA manual for use as a tool in establishing the QA program for a specific business. These documents contain detailed advice on preventative measures than is contained in the HACCP Audit Table components of the Program. Many of the recommendations in the ECA Program are also incorporated into 'Hen Care', a Quality Assurance programme for Victorian egg producers which has been adapted from the National Egg Quality Assurance Program.

³ The Code of Practice for Biosecurity in the Egg Industry 2001 and the recently released National Farm Biosecurity Manual- Poultry Production, DAFF, First Edition May 2009 contains requirements that control some of the hazards listed in this Table. In addition, welfare codes of practice also include measures that would control some of the hazards. These are mentioned in a general sense rather than list specific requirements.

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				 pullets range; water sanitation on farms; disposal systems for dead birds, reject eggs and manure from the farm; and the presence of non- poultry bird species, other poultry and pigs on the farm. The Model Code of Practice for the Welfare of Animals – Domestic Poultry 4th Edition ⁴provides recommendations pertaining to housing, space allowances, equipment, lighting, ventilation, temperature and humidity, protection, food, water, inspections, health and distress, management practices, transport and sale of poultry. 	in an inconsistent manner. These Codes of Practice are encompassed within the voluntary Egg Corp Assured program. There are no assurances that those businesses that are not ECA assured, do adhere to the Biosecurity and Welfare Codes of Practice.
	As above	Vaccination program	Qld requires a vaccination statement. Tasmania has requirements for vaccination. In Victoria, under the <i>Livestock Disease</i> <i>Control Act 1994</i> , all commercial poultry flocks in Victoria must be vaccinated against Newcastle disease.	Egg Corp Assured requires new layers and pullets to be vaccinated as appropriate and to obtain veterinarian advice on vaccination. Day old chicks are vaccinated against avian diseases such as infectious bronchitis virus and Marek's disease. Subsequently pullets are vaccinated against a number of endemic poultry disease such as Fowl Cholera, Avian Encephalomyelitis, and Newcastle disease virus.	The hazards are adequately addressed by Qld and Tas legislation and industry schemes where implemented. Also, Victorian legislation requires vaccination against Newcastle disease. The regulatory gap is in the remaining states and non-regulatory recommendations where businesses, mainly small businesses, have not implemented the industry programs.

⁴ <u>http://www.aecl.org/Images/domestic%20poultry%20code.pdf</u>

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	As above	Diseased birds and birds with conditions that result in increased faecally contaminated eggs are culled.	Qld and Tasmania include culling in the scope of the food safety program.	AECL CoP requires sick or injured birds to be culled promptly. Welfare and Biosecurity Codes include measures.	The hazards are adequately addressed by Qld and Tas legislation and industry schemes where implemented. The regulatory gap is in the remaining states and non- regulatory recommendations where businesses, mainly small businesses, have not implemented the industry programs.
	Microbiological and chemical contamination of hens from litter, feed, water and veterinary treatments which could adversely affect eggs.	Feed is stored to avoid microbiological and chemical contamination Litter is appropriate for use.	Qld has requirements for residues in stock food and use of litter as part of the egg food safety scheme. Tasmania includes requirements for inputs in the scope of the food safety program. South Australia, Qld, NSW and Western Australia have legislation enforced by primary industries or agriculture agencies in regard to contaminants in stock feed.	Egg Corp Assured manages inputs including: - requires feed to be obtained from approved supplier and transported using an approved transporter -litter to be obtained from an approved source and must be clean and dry. AECL CoP has recommendations for managing inputs including feed and litter. Welfare and Biosecurity Codes include measures which are incorporated into the Egg Corp Assured Program.	As above
	As above	Bird drinking water is stored and delivered in a closed system to avoid contamination	Qld and Tasmania include water quality programs in the food safety program.	Egg Corp Assured requires town water to be used or water to be of appropriate quality and or treated. AECL CoP has requirements to maintain water quality and for cleaning water delivery equipment.	As above

Step	Hazard	Control measure	Government legislation	Industry	Perceived gaps/comments
				Welfare and Biosecurity ⁵ Codes also include measures which are incorporated into the Egg Corp Assured Program.	
	Chemical contamination of hens from litter, feed, water and veterinary treatments which could adversely affect eggs.	Use of Agricultural and Veterinary chemicals is controlled.	Food Standards Code - specific chemical contaminants, natural toxicants and Agricultural and Veterinary chemicals in eggs Standard 1.4.1 and Standard 1.4.2 There is State and Territory legislation to control the use of veterinary medicines and other chemicals used in primary production.	Egg Corp Assured requires correct storage and use of chemicals.	National requirements exist for maximum permitted chemical residues in eggs.
	Contamination is spread by vermin and domestic animals	Pest control programs and programs to control domestic animals are in place.	Qld and Tasmania include pest control programs in the food safety program.	Egg Corp Assured requires pest control programs and measures to discourage wild birds to sheds or areas where birds range. AECL CoP requires measures to be taken to control pests and restrict access by domestic animals. Biosecurity Code of Practice includes measures which are incorporated into the Egg Corp Assured Program.	The hazards are adequately addressed by Qld and Tas legislation and industry schemes where implemented. The regulatory gap is in the remaining states and non- regulatory recommendations where businesses, mainly small businesses, have not implemented the industry programs.
	Microbiological contamination of housing, nest boxes and equipment which could adversely affect hens and contaminate eggs (particularly immediately	Design nesting boxes/cages so that contamination dump after laying is minimised.	Qld applies Standard 3.2.3 to the design, construction and maintenance of equipment as a compulsory standard under its egg food safety scheme ⁶ and includes cleaning and maintenance of equipment in the food safety program.	Egg Corp Assured requires implementation of an appropriate cleaning and sanitising program. AECL CoP has requirements for managing housing and equipment.	As above

⁵ Including the National Farm Biosecurity Manual for poultry production (<u>http://www.daff.gov.au/___data/assets/pdf__file/0009/1147554/poultry-biosecurity-manual.pdf</u>) which contains an appendix on poultry drinking water quality guidelines and Water Biosecurity manual produced by the Australian Poultry Industry Biosecurity Consultative Group (<u>http://www.daff.gov.au/___data/assets/pdf__file/0010/1162954/water-biosecurity.pdf</u>)

⁶ This requirement is general across the egg food safety scheme for equipment.

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	after lay before the shell cuticle has dried).	Housing is fit for use i.e. clean, capable of being maintained and insect/pest proof.	Tasmania includes housing and equipment in the scope of the food safety program.	Welfare and Biosecurity Codes also include measures which are incorporated into the Egg Corp Assured Program.	
	Microbiological contamination of production area due to waste products (including litter, manure and dead birds)	Control of disposal of used litter, manure and dead birds.	Qld and Tasmania includes waste management in the food safety programs.	Egg Corp Assured requires manure and dead birds to be disposed of in a manner that will prevent cross contamination. AECL CoP has recommendations for managing outputs. Welfare and Biosecurity Codes also apply which are incorporated into the Egg Corp Assured Program.	As above
Collection	Microbiological contamination due to: • age/damage/soiling of eggs if not collected • dirty equipment • handling (personnel) • cross-contamination of clean eggs by dirty, broken or leaking eggs.	Frequency of collection is controlled Collection equipment (including packaging) is fit for use and capable of being cleaned and maintained Premises and equipment are maintained in a clean condition. Handlers practice good personal hygiene Eggs are carefully handled to avoid cracking Eggs are initially sorted to segregate cracked,	Qld and Tasmania include requirements for egg collection in the scope of the food safety program.	Egg Corp Assured requirements include eggs to be collected at least twice daily and egg collection equipment to be cleaned regularly. It also has requirements for personal hygiene ⁷ . AECL CoP has recommendations for managing egg collection including hygiene of handlers, maintaining laying area free of broken eggs, maintaining egg collection equipment clean. Eggs must be collected at least once a day and only from healthy birds. The eggs must be handled as little as possible and sorted to remove cracked, dirty and incubated eggs.	As above

⁷ Management of personal hygiene and cleaning and sanitising are generic across most activities and the controls are not repeated in the Table.

Step	Hazard	Control measure	Government legislation	Industry	Perceived gaps/comments
		broken and dirty eggs prior to further sorting at grading floors (on or off site)			
Sorting	 Microbiological contamination of eggs due to: cross-contamination from broken, dirty or cracked eggs sorting environment (premises, equipment, time/temperature and humidity of sorting environment) handling (personnel) temperature and humidity fluctuations increasing likelihood of trans-shell penetration of bacteria Microbial growth if eggs contaminated and time/temperature conditions conducive. 	Candling used to identify and divert excessively dirty, cracked or broken eggs away from the clean, intact shell eggs and eggs that are to be washed. Fluctuations in temperature and humidity are avoided.	There are requirements in the Code which in effect prohibit the sale of cracked and dirty eggs as 'shell eggs'. This drives the segregation of these eggs and diversion for washing and processing. Qld requires the food safety program to include these controls and to include records as to the disposal of the various types of eggs. Tasmania requires sorting and disposal of eggs in the scope of the food safety program.	AECL CoP requires eggs to be candled and visually checked and rejected eggs ⁸ segregated. There are requirements for cleaning equipment and for personal hygiene. Egg Corp Assured requires reject eggs to be segregated and not packed as 'first quality'.	The hazards are adequately addressed by Qld and Tas legislation and industry schemes where implemented. The Code has no requirements for sorting eggs, although cracked and dirty eggs are not allowed to be sold. These requirements are unclear though due to the current definition of an 'egg'.
Cleaning /washing and drying of intact shell eggs	Microbiological contamination of eggs due to penetration of bacteria from wash water, equipment etc with increased risk if eggs are cracked or broken during handling.	All equipment/premises is fit for use; clean and capable of being cleaned and maintained	Standards 3.2.2 and 3.2.3 apply if these activities take place on premises other than where the eggs are laid. These standards include requirements for cleaning, sanitising and providing adequate equipment to ensure safe product.	Egg Corp Assured requires equipment to be working properly. AECL CoP has general requirements, for egg cleaning ⁹ , including times and temperatures of wash water and that water be free of pathogenic micro organisms and toxic chemicals.	There is a gap in the Code: requirements of Standard 3.2.2 and 3.2.3 apply if the premises are off- site from egg production, but do not apply if these activities take place at the egg production facility.
	Microbial contamination of the egg surface from:	Egg washing and dry	Code, particularly Standard 1.3.3. Processing aids applies.	There are also requirements for dry cleaning eggs.	

⁸ Rejected eggs are described in the CoP as eggs that are cracked, broken, dirty, that have been in an incubator, or have been extracted from a carcass or have a defect such as black rot. ⁹ There are no specifications for sanitiser type

Step	Hazard	Control measure	Government legislation	Industry	Perceived gaps/comments
	 Dirty equipment (eg. cloths during dry cleaning") poor hygiene practices of personnel wash/rinse water and/or build up of faecal matter in wash water Chemical residues on the egg surface from oiling, sanitisers, surface sanitising treatments or disinfection by-products 	cleaning procedures are carried out correctly to prevent bacteria on shell gaining entry into eggs, including ensuring that the egg throughput and water temperatures and sanitisers concentrations are correct. (cleaning may be achieved through wet washing, followed by drying or dry cleaning of eggs)	Qld and Tasmania include requirements for cleaning and washing eggs in the scope of the food safety program.	Egg Corp Assured requires wash water chemicals and temperatures to be within specifications and checked and chemicals to be used in accordance with relevant Australian Standards (AS 4709-2001) ¹⁰ and manufacturers' instructions.	
Packing, storage and transport of cracked eggs	by-products Microbiological contamination of shells from premises, equipment and personnel Microbial growth in the egg contents Chemical contamination from packaging material (migrations of chemical)	Generic controls (i.e. support programs) Control of temperature and humidity of cracked eggs. Generic controls	Under application provisions in the Code, Standards 3.2.2 and 3.2.3 apply if these activities take place on premises other than where the eggs are laid. Qld requires the food safety program to include controls for egg storage and transfer. Qld requires compliance with Standard 3.2.2 Division 5 Cleaning, sanitising and maintenance for vehicles transporting eggs. Tasmania requires the food safety program to include controls for packing, storage and transport of eggs.	Qld has recommendations for the transport and storage of cracked eggs AECL CoP for Manufacture of Egg Products (AECL CoMP) has recommendations for managing storage and transport of cracked eggs Egg Corp Assured requires eggs are dry prior to packing and are stored at correct temperatures.	There is a regulatory gap in that Standard 3.2.2 and 3.2.3 apply if the premises are off- site from egg production, but do not apply if these activities take place at the egg production facility.
Package, storage and transport of clean, intact eggs ¹¹	Microbiological contamination of shells from premises, equipment and personnel Chemical contamination	Generic controls	As above		

¹⁰ AS 4709-2001 Guide to cleaning and sanitising in the food industry ¹¹ The Risk Assessment found that whole clean eggs have a very low likelihood of presenting a risk to public health and therefore the contamination of contents is not considered here.

Step	Hazard	Control measure	Government legislation	Industry	Perceived gaps/comments
	from packaging material (migrations of chemical)				
Packing, storage and transport of raw egg pulp produced on premises where eggs produced (from broken or cracked eggs – shell usually separated out- may or may not be from cleaned eggs)	Microbiological contamination of egg pulp due to : -contamination from storage environment (premises, equipment, personnel) -pooling of multiple batches of pulp and cross- contamination from dirty egg product Chemical contamination from packaging material (migrations of chemical) Microbial growth during packing, storage and transport	 Control of temperature of raw pulp by storage at temperatures <5°C or Freezing pulp raw pulp not immediately treated is stored under hygienic conditions at <50C for no longer than 24 hours. Vehicles able to maintain temperature control of chilled liquid egg product at <5°C or hold frozen pulp at <-18°C. Raw pulp for processing to be labelled appropriately. 	The following standards in the Code apply: -Standard 1.2.3 – requirement for an advisory statement as to the product being unpasteurised. -Standard 1.4.3 - Articles and materials in contact with food. Under application provisions in the Code, Standards 3.2.2 and 3.2.3 apply if this activity take place on premises other than where the eggs are laid. Qld includes pulping activities on-farm in the scope of the food safety programs. Tasmania – scope of the food safety program is shell eggs and these aspects of pulp production may be outside the scope of the Egg Industry Act.	AECL CoMP has requirements for managing storage and transport of raw egg pulp. Egg Corp Assured does not extend to egg processing.	There is a regulatory gap in that Standard 3.2.2 and 3.2.3 apply if the premises are off- site from egg production, but do not apply if these activities take place at the egg production facility.
Pulping (Commercial off- farm)	 Microbiological contamination of the pulp from: dirty egg shell in contact with pulp premises, equipment and personnel Microbial growth in pulp 	Minimise contact between egg shell and egg contents. Clean eggs are used Pulping equipment/premises to be fit for use; clean and capable of being cleaned and maintained. Pulp is pasteurised or receives other microbiocidal treatment.	Under application provisions in the Code, Standards 3.2.2 and 3.2.3 apply. The States and Territory Food Acts apply.	AECL CoMP requires rejected eggs to be removed. Specifically, broken or incubated eggs must not be used and cracked eggs only used for pasteurised pulp. Dirty eggs must not be used particularly if the pulp is obtained through a centrifuging process.	There is a non-regulatory gap in that Egg Corp Assured does not apply to processing of egg products.

Step	Hazard	Control measure	Government legislation	Industry	Perceived gaps/comments
Pasteurisation	Survival of pathogens if processing inadequate. Product re-contaminated post processing	processing time/temperature parameters and pathogen levels meet requirements in the Code Pasteurisation equipment/premises to be fit for use; clean and capable of being cleaned and maintained	 Standards 3.1.1, 3.2.2 and 3.2.3 apply including controls for prevention of contamination and processing to ensure safe product. The following standards in the Code are also applicable to processing: Standard 1.6.1 – micro limit for Salmonella in pasteurised egg products Standard 1.6.2 – time and temperature processing requirements for liquid egg Standard 2.2.2 – pasteurisation requirements for egg products (and prohibition on sales of cracked eggs). 	AECL CoMP has requirements for pasteurisation of egg products	Although there are no gaps in the current standard, the current definitions of liquid egg yolk and liquid egg white are confusing.
Storage and distribution of treated (pasteurised products) Use of eggs and egg products by manufacturing businesses/caterers and other types of food businesses	Post processing contamination Microbial growth Use of cracked and or dirty eggs Contamination by physical. chemical and microbiological contaminants. Microbial growth	Control of handling and packaging Time/temperature controls No cracked or dirty eggs, or untreated pulp, available for processing into other products. Control of operations including prevention of contamination and time/temperature control.	Standards 3.1.1, 3.2.2 and 3.2.3 apply including controls for prevention of contamination and time/temperature controls for storage and distribution. Standard 2.2.2 in effect prohibits the sale of cracked or dirty eggs because an 'egg' is defined as an egg that is free of cracks and dirt. The standard also states that cracked eggs must not be available for retail sale or catering purposes. The Food Acts and Chapter 3 of the Code apply. Specifically, Standard 2.2.2 requires egg product made from cracked eggs to be pasteurised or equivalent. It also requires all egg products to be pasteurised or equivalent and there are exemptions for the use of unpasteurised pulp if the food product will receive an equivalent treatment. However, Standard 1.6.2 has requires all pulp to be pasteurised with exemptions for liquid egg white. Tasmania has introduced controls as conditions of registration on food businesses	The AECL CoMp has requirements for storage after pasteurisation, packing and distribution The AECL CoMp requires businesses to purchase eggs from producers/food businesses that comply with the AECL CoP (the Code of Practice for shell egg production, grading , packing and distribution. The AECL CoP requires suppliers to provide caterers with advice on safe handling and storage of eggs.	There is a perceived gap that processed egg products need to be stored or transported under time/temperature control. The regulatory requirements are unclear: the current requirements in the Code are not clear as to whether unpasteurised pulp can be sold for use in other foods. It is also unclear whether businesses can use cracked eggs in products that are subsequently heat treated.

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			that elect to make raw egg products. Businesses are required to document the method of production and keep specified records of quantity made, time out of refrigeration etc.		
			Under Chapter 3, businesses providing food service to vulnerable persons are required to have food safety programs.		
			In addition, Victorian businesses and Qld caterers are required to have food safety programs.		
Retail sale of shell eggs and egg products	Sale of cracked or dirty eggs and untreated pulp	No cracked or dirty eggs, or untreated pulp, available for processing into other products.	As above. Cracked and dirty eggs are not 'eggs' and cracked eggs must not be available for retail sale. All egg products for retail sale must be pasteurised or equivalent under Standard 2.2.2	The AECL CoP requires suppliers to provide retailers with advice on safe handling and storage of eggs. The AECL also provides guidance to retailers on egg handling to avoid breakages.	The current requirements for the sale of cracked or dirty eggs and untreated pulp are unclear regarding who can receive these eggs.
Traceability	Inadequate traceability due to unknown source and/or destination of eggs and/or egg products with consequent difficulty in determining the cause of food borne outbreaks and recalling only affected product.	Egg or egg product identification, date marking and receipt/distribution records.	The labelling and lot identification requirements of the Code apply to eggs and egg products including Standard 1.2.1 and Standard 1.2.2. The recall provisions in Standard 3.2.2 also apply. Qld requires eggs to be stamped with a unique identifier. Tasmania requires a system as part of the food safety program to identify the place where the eggs were laid and the date the eggs were laid.	AECL Egg Labelling Guide provides guidance on legislation (at 2006) for labelling. It does not specific address traceability. ISO 22005:2007. Traceability in the feed and food chain. ¹²	There are traceability requirements in two States only.

 $^{^{12}}$ ISO 22005:2007 gives the principles and specifies the basic requirements for the design and implementation of a feed and food traceability system. It can be applied by an organization operating at any step in the feed and food chain.

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					gaps/comments
Skills and knowledge of food handlers	Use (and storage) by producers, caterers/retailers and processors of : • cracked and dirty eggs • raw egg pulp • foods containing raw egg	• Staff trained to ensure careful handling to avoid cracking	For activities where Chapter 3 applies, there are requirements for skills and knowledge. Food Acts in Qld and Vic require compulsory training. Qld requires training as part of the food safety program. Its not clear whether Tasmania specifically includes training within the scope of the food safety program.	Egg Corp Assured requires training. AECL CoP and the CoMP require on- going training.	Apart from those food handlers who comply with Chapter 3, there is a perceived gap in skills and knowledge for egg producers who may handle cracked and dirty eggs or raw egg pulp.