EGG CLEANING PROCEDURES

GUIDELINES TO COMPLY WITH
THE EGG FOOD SAFETY SCHEME
OF FOOD REGULATION 2015

NSW GOVERNMENT
Department of Primary Industries
Food Authority

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Introduction

Under the Australian Food Standards Code 4.2.5 an egg producer must not sell or supply eggs or egg pulp for human consumption if the eggs are unacceptable.

An unacceptable egg is:

a) a cracked egg or a dirty egg, or
b) egg product which has not been processed in accordance with the Standard, or
c) egg product which contains a pathogenic micro-organism, whether or not the egg product has been processed in accordance with the Standard.

Egg businesses that produce and wash or clean and grade eggs for human consumption must implement appropriate cleaning procedures to ensure the safety of their product.

Dirty eggs can be a health hazard if they are not handled correctly. Dirty eggs can carry harmful bacteria that can enter the eggs and if not cooked properly they can potentially cause food poisoning.

Dirty eggs must not be sold for retail sale. Dirty eggs must be either:

- cleaned so that visible faeces, soil and other matter is removed from the shell, or
- sold to a licensed egg business that washes or dry cleans, or
- discarded.

Egg collection for small farms

Eggs should be collected often, at least once per day, to help decrease the number of dirty and cracked eggs. Collection of eggs should be more frequent during very hot and cold weather.

Important points to remember when collecting eggs:

- clean eggs should be separated from dirty eggs
- eggs should be collected in an easy to clean container like coated wire baskets or plastic flats. This will prevent stains from rusted metal and contamination from other materials which are difficult to clean and sanitise
- do not stack eggs too high. If collecting in baskets do not stack eggs more than 5 layers deep. If using plastic flats do not stack more than 6 flats
- eggs should be held below 15°C with 70% humidity prior to cleaning
- embryos can start to develop in fertile eggs held at a temperature of 29°C for more than a few hours
- never cool eggs rapidly before cleaning. The egg shell will contract and may pull any dirt or bacteria on the egg surface into the pores when cooled
- keep egg temperature fairly constant until the eggs are washed to avoid sweating
- sweating occurs when eggs are moved from cold storage to a warm environment, and
- condensation on the surface of the egg facilitates movement of microbes inside the shell.

Egg collection on larger scale

Depending on the farm size and design, different methods can be used for daily egg collection. Custom made egg collection system such as elevators, lift systems, curve and rod conveyors as well as multi-tier, multi-level egg collection systems can be used to collect clean eggs with a minimum number of cracked and hair-cracked eggs.

Acceptable egg cleaning methods

Dry cleaning eggs for small farms

A slightly dirty egg can be brushed with an egg brush or rubbed with a sanding sponge, loofa, paper towel and plastic scourer (if stained) with a gentle rubbing motion. Eggs with visible faeces, soil or other matter that cannot be removed by dry cleaning should be segregated and disposed of hygienically, away from clean intact eggs.

To dry clean eggs:

- disposable paper towels are recommended to avoid reuse
- if a dry cloth is used, an adequate supply should be available so that only clean cloth is passed over the egg each time
- make sure the cloth is changed if there is any sign of soiling
- dirty cloths must be washed, sanitised and dried afterwards if they are to be reused for cleaning, and
- if cloth or any other alternative material is used for cleaning, it should be suitable for contact with food.

If dirty eggs are cleaned with damp cloth, certain precautions must be taken:

- the water used to dampen the cloth should be sanitised and frequently changed
- detergents and sanitisers used must be suitable for contact with food and used according to the manufacturer's specifications
- damp cloth should be rinsed adequately in sanitised water and wrung thoroughly so it is not dripping before being used
- when damp cloth is passed over the egg, it should not leave water droplets on the egg surface
- only a thin layer of moisture that can readily evaporate should be visible on the egg surface
- there should be an adequate supply of damp cloth available and changed frequently with any visible sign of soiling, and
- dirty cloths should be washed, sanitised and dried if they are to be reused for cleaning

Any brushes, cloths, loofas, etc. used in cleaning should be sanitised in 100 ppm of chlorine for 20 minutes after use. Materials used for cleaning eggs should be food grade and must not be used for any other purpose. Sanding blocks should not be used as they are not made to be used with food and loose grit could be left on the egg.

Wet cleaning (egg washing)

As egg shells are porous, washing can allow microorganisms to enter through the pores of the shell. Eggs contract as they cool and may draw wash water into the egg. Therefore:

- wash eggs as soon as they are collected. This will help limit the opportunity of contamination and loss of interior quality

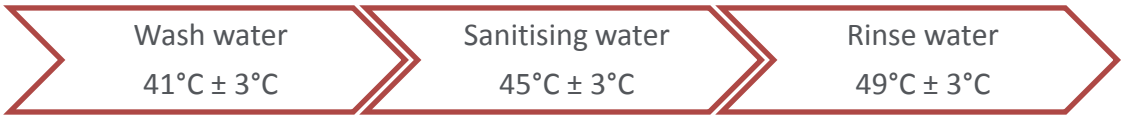
- wash water should be held at 41-44°C and if using egg washing chemical or sanitiser (e.g. Eggcellent[1]) the pH should be greater than 10.5 to minimise the potential for contamination to occur
- if using appropriate temperature water, without any chemicals (detergents or sanitisers) and the water is not recirculated, the pH of the water does not have to be taken into consideration
- the washing process should also be continuous so that eggs are not allowed to stand or soak in the wash water, and
- eggs should be dried after washing. If egg shells are left wet the risk of microorganisms entering the egg is increased.

Documentation requirement of egg producers and graders

Egg producers/graders that wash eggs must have a documented procedure for this process to ensure that contamination from the wash water is minimised.

This procedure should outline the:

- temperature of the water to be used at all stages of the washing process (e.g. wash, sanitise and rinse) with appropriate temperature differentials observed. For example, in a three-stage wash process the water should be:



- pH of the wash water with any kind of added sanitiser or wash chemical (pH ≥ 10.5 to be obtained)
- pH of recirculated wash water (a pH of ≥ 10.5 must be obtained to control growth of *Salmonella*)
- detergent (food grade)/sanitiser (chlorinated or other) concentration
- corrective action for noncompliance with the washing temperatures or pH values, and
- egg drying process.

The pH and temperature of the water at all stages of the washing process must be recorded for each batch of eggs washed.

Egg washing should be undertaken in a dedicated room with good drainage. There should not be any pest infestation, and a recognised vermin control program should be in place. All steam and vapours should be effectively removed.

Various commercial instruments are available to assist with egg washing/sanitising/drying.

Immersion egg washers are not prohibited however, to mitigate the risk of potential egg contamination, the Food Authority encourages that they are NOT used.

Brush and spray washers are ideal instruments to be used in egg cleaning. The Food Authority can assist if there is doubt on the type of instrument to be used for the egg cleaning process.

[1] Eggcellent – Campbell Cleantec-www.cleantec.com.au/product.asp

Prewash / wash / rinse water

- All water supplies should ideally be of potable quality.
- Only soft water should be used and a suitable softener should be used in hard water areas.
- If non-reticulated water is used in washing of eggs, it must be tested in accordance with the NSW Food Safety Schemes Manual.
- Businesses wanting to use recycled water are required to apply in writing to the Food Authority. Applications will be considered on a case by case basis.
- Businesses that use a non-reticulated water supply and treat the water with chlorine or another suitable method are required to test this water daily for residual chlorine levels and maintain records of the water treatment. Food Safety Officers will review monitoring records and test results during audit.

Pre-washing

Dirty eggs can go through a pre-washing process to loosen dirt and faecal matter, before being washed.

When pre-washing, it is important to ensure:

- pre-wetting must be accomplished by spraying a continuous flow of water over the eggs in a manner that permits the water to drain away
- the temperature of the water should be at least 11°C higher than that of the eggs and a minimum of 3°C lower than that of the wash water
- eggs need to be held where drainage of spray water is free, as the eggs **cannot** stand or soak in the water
- washing needs to start immediately afterwards, and
- the pre-wash water must not be reused.

Sanitising

Chemicals for cleaning and sanitising eggs should:

- be incorporated in the wash and final rinse solutions
- follow manufacturers recommended concentration and alkaline sanitiser
- effectively remove microorganisms from the egg shell
- not damage the egg shell or its cuticle
- not affect the texture or taste of the eggs before or after cooking
- be easily rinsed off so does not leave any residue
- have a neutral or alkaline pH (acidic solution destroys egg shell)
- be compatible with water supply, and
- be safe and suitable for contact with food.

Washing

Eggs need to be washed in water that is at least 11°C higher than the temperature of the warmest egg. This will make the egg contents swell and push the dirt away from the pores of the egg.

During egg washing:

- eggs should be washed only once, except for any pre-wash that may be used
- wash water temperature should be between 41–44°C
- pH of incoming wash water can be between 6.1 to 6.7, however if the wash water is recirculated, the pH should be maintained at greater than 10.5 to control growth of *salmonella*
- solutions should be changed regularly, at least every 4 hours for continuous operations or after 20 dozen eggs
- eggs should not be allowed to stand or soak in water; once the temperature equalizes eggs can absorb contaminants out of the water
- the pH of recirculated wash water and temperature of the water at all stages of the washing process must be recorded for each batch of eggs washed
- if you have extremely dirty eggs, a mild detergent (e.g. Eggcellent) approved for washing eggs can be used.

Rinsing

Final rinsing procedure removes the residue of any chemicals and loose dirt adhering to the surface of the shell.

When rinsing it's important to note:

- rinse water should be a few degrees higher than the wash water to prevent drawing of water into the egg, and
- rinse solutions should not be re-circulated.

Drying

- Eggs must be promptly and thoroughly dried after rinsing and prior to packing. drying can be achieved with high speed air flow which causes water to evaporate from the shell surface.
- Air could be warmed or dehumidified.
- Eggs should be stored between 5°C to 15°C under clean and dry conditions with their broad pole uppermost.
- Condensation on the eggs should be avoided.

References

AECL. Code of practice for shell egg production.
http://www.aecl.org/assets/Uploads/Resources/Code-of-Practice-for-Shell-egg-production-grading-packing-and-distribution-2009.pdf

ATTRA – is funded under a grant from USDA rural business cooperative service.

CODEX. www.codexalimentarius.org/input/download/standards/.../CXP_015e.pdf
http://www.fao.org/docrep/012/i1111e/i1111e01.pdf

EFSA. Opinion on the scientific panel on micro risks on washing table eggs.
http://www.efsa.europa.eu/en/efsajournal/doc/269.pdf

Health Canada
http://www.inspection.gc.ca/food/eggs-and-egg-products/manuals/shell-egg/chapter-18/eng/1375380670241/1375380672147#a18.10 and http://www.inspection.gc.ca/food/eggs-and-egg-products/manuals/shell-egg/chapter-3/eng/1376678096775/1376678147114#a363

USDA. Egg Grading Manual.
http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELDEV3004502

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