

National *Salmonella* Enteritidis Monitoring and Accreditation Program Guidelines



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1. Definition and Function

Acronym	Definition	Function
APVMA	Australian Pesticides & Veterinary Medicines Association	Registration of all agricultural and veterinary chemical products into the Australian marketplace
BQ, DAF	Biosecurity Queensland, Department of Agriculture and Fisheries	Government organisation that coordinates government's efforts to prevent, respond to, and recover from animal and plant pests and diseases that threaten the economy and environment in Queensland
DAFWA	Department of Agriculture and Food, Western Australia	Government organisation that helps to grow and protect Western Australia's agriculture and food sector
ESA	Egg Standard of Australia	An industry quality assurance scheme that is voluntary and to provide a means of demonstrating best practice at farm level
GFSI	Global Food Safety Initiative	An industry-driven initiative providing thought leadership and guidance on food safety management systems necessary for safety along the supply chain that is internationally recognised
HACCP	Hazard Analysis Critical Control Point	A systematic approach to identifying and assessing hazards and risks associated with a food operation and defining the means of their control
IMVS	Institute of Medical & Veterinary Science	South Australian Pathology trading as IMVS, provides a unique blend of state-wide pathology services with comprehensive basic and clinical research programs
NATA	National Association of Testing Authority	Australia's government-endorsed provider of accreditation for laboratories and similar testing facilities conducting tests, calibrations and measurements in a wide spectrum of technical fields
NSW DPI	NSW Department of Primary Industries	Government organisation that provides a range of services to stakeholders in NSW, to continue driving economic growth and increasing the value of primary industries in the state
NSW FA	NSW Food Authority	Government organisation that helps ensure food in NSW is safe and correctly labelled
PIRSA	Primary Industries and Regions, South Australia	Government organisation that helps develop the South Australia economy, with responsibility for the prosperity of the state's primary industries and regions

Term	Definition
3M swab	Flat sponge swab for sampling surfaces
Administrator	The administrator of NSEMAP is the person appointed by the NSW DPI
Boot swab	Sock, surgical shoe cover or mob cap
Drag swab	Two 5-8 cm gauze pads, or similar, connected to a cord of a suitable length
Farm	A distinct site to which the accreditation applies, includes all flocks (sheds) on the farm
Flock	A flock includes all birds in a shed
NSEMAP Member	The owner of a farm enrolled in the NSEMAP
Point of lay	Term used to describe pullets who are about to begin their first lay. Generally, around 18-22 weeks old
Pooled samples	Individual samples that are collected from several locations or several birds or objects from one flock and pooled together
Poultry	Domestic fowl (including chickens, turkeys, quail, ducks, and geese) raised for the production of meat or eggs
Property	A property is defined by a Property Identification Code. A single property may have several sheds on it.
Rearing	Stage after brooding until point of lay
SE	<i>Salmonella</i> Enteritidis

2. Purpose

The guidelines outline the National *Salmonella* Enteritidis Monitoring & Accreditation Program (NSEMAP) for all Australian commercial egg producers exporting eggs to overseas markets.

3. Scope

The guidelines focus on testing requirements and accreditation processes for *Salmonella* Enteritidis (SE) freedom. The guidelines do not explicitly cover other critical elements of a SE control program such as hazard analysis critical control point (HACCP) systems or biosecurity requirements. Producers are encouraged to consult other resources e.g., existing company biosecurity programs, their respective state and territory Food Authority, Department of Primary Industries, Biosecurity and the [Australian Eggs Limited](#) for further information.

4. Background

4.1 *Salmonella* Enteritidis

SE is a notifiable disease of poultry in all Australian jurisdictions. This means that there is a legal obligation to notify authorities if you know or suspect that poultry are infected with this disease. SE often goes unnoticed, but it can sometimes present clinically in young birds as depression, poor growth, weakness, diarrhoea, and dehydration. Possible sources of infection in commercial layer flocks include transmission from breeders, humans, contaminated environment, infected vermin (including rodents) and contaminated feed, vehicles and fomites. Transmission to progeny from breeders is mainly through eggshell contamination, although transmission through the egg may also occur.

4.2 Human health implication

SE infection in humans is characterised by acute onset of fever, abdominal pain, diarrhoea, nausea, and sometimes vomiting. The onset of clinical signs occurs 6-72 hours (usually 12-36 hours) after ingestion of bacteria and symptoms last for 2-7 days. Consequences of SE can potentially be severe in highly vulnerable human populations such as the young, old and immunocompromised. Eggs are a common vehicle for transmission of SE to humans. In particular, mayonnaise, desserts and sauces that contain raw egg have caused outbreaks.

5. Accredited Status requirements

The NSEMAP offers an Accredited Status (AS) for eligible commercial poultry farms in Australia. To become eligible for accreditation as SE-free, all the requirements of the guidelines must be met.

Accreditation status of the farm lasts for 12 months from date of issue of certificate, unless the Administrator has cancelled or suspended the Member (see Section 12).

- Sampling and testing is conducted in accordance with the guidelines and results have been forwarded to the Administrator
 - In the 12 months prior to accreditation, for each flock on the farm there must be three consecutive monthly tests followed by three consecutive 3 monthly tests
 - Once accredited sampling must occur at a minimum every 3 months in every flock on the farm
 - Replacement pullets must be derived from either:
 - a NSEMAP accredited farm; OR
 - the replacement pullets' environment is tested 1 month before arrival according to the NSEMAP *Salmonella* Enteritidis environmental sampling procedures with negative results; OR
 - fifteen blood samples from the replacement flock are tested by the SE ELISA (to achieve a 95% confidence of a 5% incidence) within 1 month prior to arrival with negative results.
- All test results over the previous 12 months are negative for SE.
- A documented biosecurity program that monitors and prevents the introduction of SE from outside the farm and spread between poultry sheds is in place.
- For farms producing eggs (or egg products) for human consumption, eggs on-farm are promptly stored in a cool environment where the thermostat temperature is set at less than 15°C, but greater than 1°C.
- Drinking water is derived from a potable water source, or has been effectively sanitised in line with the National Water Biosecurity Manual - Poultry Production.
- An effective auditable vermin control program is in place and rodenticides are used in compliance with APVMA label instructions.
- Feed is stored on-farm in areas not accessible to other animals (including vermin).
- People working on the farm, particularly in the egg collection processing area, are familiar with, and follow, personal hygiene to minimise chance transfer of *Salmonella* from humans to poultry, or their products.

- Recommended industry practices are employed on the farm, particularly in the egg collection and grading area, in order to minimise risks associated with SE cross-contamination between equipment, eggs and humans.
- A satisfactory on-farm inspection by an approved veterinarian with recommendations made to the Administrator supporting accreditation.
- Annual verification audit completed (see Section 11) and all components assessed as satisfactory, or relevant corrective actions implemented. Note one satisfactory verification audit will be required before granting of accredited status for farms entering the scheme.
- Annual registration fees are received in a timely manner by the Administrator.

An accreditation certificate will be provided for accredited farms to assist producers in complying with import requirements of overseas countries. An accreditation certificate will be issued annually once payment for fees has been received along with relevant paperwork completed by owner and approved veterinarian, and sampling has been completed as per the Guidelines. Forms can be located on [NSW DPI website](#).

6. Fees

The following fees (inclusive of GST) will be payable to the NSW DPI for each member:

- Initial accreditation and annual re-accreditation fee: \$176 (payable initially and annually thereafter).
- Late re-accreditation fee: \$240 (payable if all re-accreditation requirements are not received by the Administrator by the expiry date).

Fees are calculated on a cost-recovery basis and will be subject to periodic adjustment by NSW DPI.

All costs, as part of obtaining and maintaining accreditation in the NSEMAP (including sampling, testing, verification audits and on-farm inspections), are the responsibility of the NSEMAP member.

7. Administration

The NSEMAP will be administered by the Administrator (appointed by NSW DPI).

The Administrator will notify the respective jurisdiction of any new farm that joins the NSEMAP from that jurisdiction in a timely manner.

The Administrator will notify the respective jurisdiction of any issues relating to Accredited farms from that jurisdiction in a timely manner.

The Administrator will ensure systems and policies relating to the NSEMAP are in place to maintain appropriate levels of confidentiality of information from other jurisdictions, particularly in relation to reporting of any results.

The Administrator, in consultation with animal biosecurity staff, may initiate any investigations and impose conditions deemed necessary to ensure that the credibility of the NSEMAP is maintained.

The guidelines may, if deemed necessary, be revised by NSW DPI subject to appropriate consultation with internal and external stakeholders.

The Administrator will provide Animal Health Australia with de-identified data quarterly for storage in the National Animal Health Information System for reporting purposes and for analysing the national status for SE.

For further information, please contact:

Jo Collins
Administrator NSEMAP

Phone: 02 6391 3607

Email: jo.collins@dpi.nsw.gov.au

8. Approved testers

Approved testers for the NSEMAP include:

- Registered veterinarians who have been approved by the Administrator.
- Lay persons who have been trained by an approved registered veterinarian (training records must be kept and be available for inspection at the time of the verification audit, or on request by the Administrator).

9. Approved laboratories

Approved laboratories for the NSEMAP include:

- NSW Animal and Plant Health Laboratories (APHL), Elizabeth Macarthur Agricultural Institute, Woodbridge Road, Menangle NSW 2568, Phone: 1800 675 623.
- Microbiological Diagnostic Unit, Peter Doherty Institute for Infection and Immunity, The University of Melbourne, Royal Parade, Parkville VIC 3052, Phone: 03 8344 5701.
- IMVS Food and Environmental Laboratory (SA Pathology), Frome Road, Adelaide SA 5000, Phone: 1800 188 077.
- Biosecurity Sciences Laboratory, Health and Food Science Precinct, 39 Kessels Road, Coopers Plains, QLD 4108, Phone: 07 3708 8762.
- Private laboratories that are NATA certified for *Salmonella* testing and have been approved by the Administrator.

SE testing must be performed by an approved laboratory employing a microbiologist or a veterinarian. The laboratory must have the capacity to differentiate Group D from other *Salmonella* groups (Group D includes *Salmonella* Pullorum, *Salmonella* Gallinarum and SE) or arrange for this differentiation to be performed via another approved laboratory.

10. Reporting

Results of any SE testing must be emailed to avian.labresults@dpi.nsw.gov.au within 30 days of the sample collection date. SE negative results must be reported in such a way that it is clear to the administrator SE has not been detected.

Any SE isolates must be sent to a reference laboratory for further identification via whole genome sequencing (WGS). Positive SE results must be reported to the relevant jurisdictional authority within 24 hours. It is the responsibility of the laboratory to report these results. Relevant jurisdictions include:

- NSW:** Animal Biosecurity - NSW Department of Primary Industries
- VIC:** Chief Veterinary Officer Unit - Victorian Department of Economic Development, Jobs, Transport and Resources (DEDJTR)
- QLD:** Biosecurity Queensland - Queensland Department of Agriculture and Fisheries
- TAS:** Biosecurity Tasmania - Tasmania Department of Primary Industries, Parks, Water and Environment
- SA:** Primary Industries and Regions SA (PIRSA)
- WA:** Department of Agriculture and Food, Western Australia (DAFWA)
- NT:** Northern Territory Government – Animal Biosecurity Branch

11. Verification

Annual verification of the NSEMAP is to be by way of an annual audit performed in conjunction with an Egg Standard of Australia (ESA) audit, retailer (Coles or Woolworth) audit, State Food Safety Department or a Global Food Safety Initiative (GFSI) recognised audit, or by another independent certification body approved by the administrator. The annual verification audit will be completed using the NSEMAP Verification Form found on the [NSW DPI website](#).

Areas to be verified, but not limited to, include site/building set up, cleaning and sanitation, water sanitation, feed, pest control, staff hygiene training, egg handling and grading, training of samplers and veterinarians, and farm biosecurity standards.

It is the responsibility of the owner/s of the flocks enrolled in the NSEMAP to comply with the verification requirements and to provide evidence to the Administrator on request.

12. Loss of accreditation

Accreditation may be **suspended** if:

- Application for renewal is not carried out before the expiry date
- Testing is not carried out within 4 weeks of the specified period, ie. 120 days from the last test result
- Verification audit is not sent within 14 months of last audit showing that all corrective actions relating to NSEMAP have been closed out.
- There is any breach or suspected breach of the guidelines
- SE positive serological or environmental samples are reported
- There is suspicion that flocks are associated with clinical cases of SE

Any farms not meeting the scheme's requirements, as outlined above, will be issued with an impending suspension notice. The member will have 7 days to provide the required results and then, if not provided then the farm will be automatically suspended from the scheme until requirements are met. In cases of extenuating circumstances, the member should apply for an exemption in writing to the Administrator ahead of the deadline. If suspended, farms cannot be considered an accredited part of the scheme until suspension has been lifted. This could be in despite of having a current accreditation certificate.

Accreditation will be **cancelled** following:

- Continued breaches of the NSEMAP guidelines
- SE positive culture from the internal organs of chickens from suspected SE positive flocks

13. Re-accreditation

NSEMAP members will be re-accredited annually on receipt of completed "Approved veterinarian recommendation for re-accreditation" form from the Approved Veterinarian, "Owner Agreement Re-Accreditation" form from the farm owner, and payment of membership fees. Both forms will need to be completed for each farm.

Re-accreditation after suspension or cancellation is subject to a review of each individual case by the Administrator and may be subject to a renewal fee.

For farms seeking re-accreditation subsequent to cancellation due to an SE positive culture from bird samples, testing requirements as per Section 5 will need to be met for the farm (ie. three consecutive negative monthly tests followed by three consecutive negative 3 monthly tests for each flock on the farm). Results from mandatory testing associated with jurisdictional requirements for returning-to-production may be used to satisfy this requirement.

14. Change of ownership

When the ownership of an accredited farm changes, it may be re-registered in the new owner's name provided the new owner applies to the Administrator for accreditation and undertakes to comply with the guidelines of the NSEMAP.

If sampling results from prior to change of ownership meet the NSEMAP Guidelines requirements the farm can continue as an Accredited once a Vet Recommendation for Initial Accreditation form and Owner's Agreement for Initial Accreditation form have been received by the Administrator.

15. Positive environmental swab result

SE environmental drag swabs will require confirmatory testing that may consist of serological tests, necropsy, and bacteriological culture from animal tissues of the initial sampled flock and further drag swabs. Accreditation will be suspended during these investigations and corrective actions are to be undertaken.

The Australian Eggs *Salmonella* Enteritidis Response Plan is available at <https://www.australianeggs.org.au/what-we-do/leading-research/salmonella-enteritidis-response-plan>

Appendix - *Salmonella* Enteritidis environmental sampling procedure

a) Sample collection

'On-farm sampling' can be performed by farm personnel trained by an approved registered veterinarian. Swab samples from different sheds/flocks (unless specifically approved by the Administrator) must not be mixed together and are not to be pooled into one vessel. Each sample pool must be clearly identified including date, farm name, flock or shed description (number) and the collector's name.

All swabs must be pre-moistened with water or other media as supplied via commercially supplied *Salmonella* sampling kits or by the testing laboratory.

Detailed methodology on swab preparation and collection (by swab type/shed design/production system) have been published by Australian Eggs Limited (available at: <http://australianeggs.org.au/for-farmers/resources/food-safety>).

Minimum sampling requirements are set out in the following. For any farm, deviations from that set out below must be designed and documented by an NSEMAP approved veterinarian in consideration of shed design and production system.

Cage Systems

In the cage system, swabbing of manure is required (via manure pit or manure belts) according to the following:

- If swabbing the manure pit (single tier conventional cage), the swab is dragged through the centre of the manure under the cages for the whole length of the row and then back again to the start point.
- If swabbing via manure belt (multitier cage system), tie swab at the end of the lowest tier of each row prior to the time when the manure belts are operating and cascading on the manure collecting belt to remove manure from the shed.
- Repeat for remaining rows:
 - In sheds with less than 5 rows per shed, all the rows must be sampled.
 - In sheds with 5 and more rows per shed, at least 4 rows must be sampled. In these cases, the selection of rows must cover all age groups and sub-flocks in the shed.
- Minimum number of swabs collected:
 - Sheds with up to 4 rows = 1-4 (1 swab per row).
 - Sheds with 5+ rows = 4.
 - Place all individual swabs from a shed (maximum of 4) into a secure vessel and label with flock/shed ID.

The swabbing of manure belts at selected point positions along the rows is not allowed due to the low sensitivity of this approach in identifying salmonella within the housed flock.

Other surfaces like egg belts may be swabbed as supplementary testing; however, they must not be pooled with manure swabs.

Cage-Free Production Systems

In deep litter, fully slatted or combined (litter + slatting) barn type housing situations, swabbing of both the flooring and nest boxes/egg belts (only if flock is in production) are required. In fully slatted houses the sampling of the surface of the slats alone is adequately sensitive and there is no need to access the manure. In aviary systems that have both deep litter areas and manure belts, the latter can be sampled in a manner similar to that in a multi-tiered cage system.

Swabbing of deep litter or slatted flooring can be carried out using either boot swabs OR drag swabs.

- **Boot swabs:**
 - For sheds without partitions, the floor area is divided into halves. Within each section, the person (wearing 1 x boot swab per boot) walks in a sideways-v-pattern through the floor area, i.e. start at one corner of the initial end, walk in a direction toward the middle of the opposite end and once reached, return to the opposite corner of the initial end.
 - For sheds with pens/partitions, within each pen/partition, the person (wearing 1 x boot swab per boot) walks in the same a sideways-v-pattern through the floor area.
 - Once completed pool swabs from each shed into a labelled vessel.
 - Minimum number of boot swabs collected 4 swabs (2-pairs) per shed.

- **Drag swabs:**
 - For sheds without partitions, the floor area is divided into thirds and each section is swabbed with the drag swab assembly diagonally from one end to the other along the selected area and back again to the initial point.
 - For sheds with pens/partitions, the floor area of each pen is divided into halves and each half is swabbed with the drag swab assembly diagonally (or alternatively in a sideways-v pattern if necessitated by pen/partition layout) as previously outlined.
 - Once completed pool swabs from each shed into a labelled vessel.
 - Minimum number of drag swabs collected 3 swabs per shed.

For flocks in production, two additional swabs must be collected from either the nest box flooring OR egg belt lines, according to the following:

- **Nest Boxes:**
 - Two swabs (3M swab, sponge swab, gauze pad for example), pre-moistened.
 - Swab flooring within approximately 10% of available nest boxes.

- **Egg Belt Lines:**
 - Two swabs (3M swag, sponge swab, gauze pad for example), pre-moistened.
 - Swab approximately 9m of belt material.

b) Laboratory submission

Once collected *Salmonella* swab samples can be sent cold chain or under ambient conditions to approved laboratories. For convenience and expedience samples can be sent with satisfactory outcomes at ambient temperatures using Express Post plastic envelopes. Sample kits that include pre-filled out return plastic envelopes, submission forms, swabs and swab containers can be obtained from laboratories prior to sample collection.

Ensure that the laboratory submission form mentions that the samples are for the NSEMAP.