

ANNUAL FOOD TESTING REPORT 2018-2019



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Introduction

The NSW Food Authority's (the Food Authority) primary objective is to provide consumers in NSW with safe and correctly labelled food.

To support this objective the Food Authority regularly conducts testing of food products to ensure compliance with regulatory requirements, as part of foodborne illness investigations and to gather information to identify and respond to food safety issues. The Food Authority also undertakes scientific surveillance projects to identify and better understand food safety issues and risks in NSW. The data obtained in these surveillance projects allows the Food Authority to identify and respond to key food safety issues and develop systems and processes to manage the prevention of foodborne illness effectively and maintain food safety.

DTS Food Assurance (DTS) is the primary testing provider for the Food Authority. Testing services provided by DTS include microbiological, chemical, foreign object identification, allergen contamination and nutritional composition. DTS has had accreditation from the National Association of Testing Authorities (NATA) since 1961.

At the end of each financial year, the Food Authority reports on the testing conducted by the Food Authority's primary testing provider and by other laboratories. Other laboratories used in 2018-2019 included Symbio Laboratories for biotoxin analyses, Elizabeth Macarthur Agricultural Institute for microbiological analyses and NSW Health Pathology for whole genome sequencing and serotyping.

Why test?

Samples are submitted for testing for reasons such as hygiene assessment, foodborne illness investigation, verification of food safety programs and for research purposes. Testing results are then used to:

- Ensure compliance to regulatory requirements
- Assist with the development of food regulatory framework
- Assist with the evaluation and review of regulations
- Assist with enforcement actions
- Respond to incidents that occur in the industry
- Provide scientifically based industry communication, training and advice
- Provide scientifically based consumer advice and information
- Assist local government with any concerns and complaints
- Assist with the development of emergency management framework

A year in review

Between July 2018 and June 2019, a total of 6,431 samples were submitted for testing: 5,438 samples to DTS where 10,756 individual tests were conducted and 993 samples to other laboratories (table 1). Sample types analysed included meat, seafood, dairy, plant products, packaged food, eggs, food from retail outlets and environmental samples (e.g. swabs and stock feed samples). Most samples were submitted for multiple tests which may have included both chemical profiling and microbiological assessment. Over 70 different types of tests were performed including microbiological assessment, pH, water activity and allergens and additives such as preservatives.

Table 1. Number of samples per category

Category	Number of samples
Verification programs	676
Research and targeted surveillance projects	660
Food safety compliance	5,095
Total	6,431

Verification programs

Food Safety Schemes verification program for ready-to-eat (RTE) products

The Food Safety Schemes verification program monitors RTE food that is produced under NSW Food Safety Schemes (the Schemes). Samples collected as part of this program include dairy, meat, eggs, plant products and seafood. RTE foods that were manufactured or packaged under the Schemes were purchased directly from the manufacturer or from retail outlets and tested against the requirements set out in the Food Safety Schemes Manual.

Between July 2018 and June 2019, a total of 162 samples were randomly collected from 71 businesses and submitted for testing (Table 2). This number of samples is lower than in previous years. A high level of compliance in previous years allowed the program to be reduced to allow focus on other higher priority areas. Two of the samples collected and tested were outside the scope of this program and were not included in the data analysis.

Three products from three different manufacturers were found to be non-compliant due to the following reasons:

- Two samples of soft cheese contained *E. coli* greater than the regulatory limit of 10 cfu/g
- One sample of gelato contained *E. coli* greater than the regulatory limit of 10 cfu/g

Follow-up actions taken for non-compliant results included premises inspections by an Authorised Officer from the Food Authority, re-sampling of product for analysis and on-going compliance activities.

Table 2. Number of samples analysed for the Food Safety Schemes verification program

Scheme	No. of samples tested	No. of non-compliant samples (%)
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Dairy	69	3 (4.3%)
Meat	43	0 (0%)
Plant products	47	0 (0%)
Seafood	1	0 (0%)
Total	160	3 (1.9%)

Raw poultry verification program

The raw poultry verification program gathers ongoing data on the prevalence and levels of *Campylobacter* and *Salmonella* in raw poultry so that any changes over time can be monitored and the effect of Standard 4.2.2 can be analysed.

Samples of raw poultry were collected from processing facilities and retailers in NSW and tested for *Campylobacter* and *Salmonella*.

Between July 2018 and June 2019, a total of 196 whole chickens and chicken portions were collected from processing plants and 312 chicken portions were collected from retail outlets. Fourteen samples collected from retailers were not included in the data analysis due to loss of temperature control during transportation.

At the processing plants, *Salmonella* was detected in 21.4% of samples (1.5%¹ of samples had quantifiable levels of *Salmonella*) and *Campylobacter* was detected in 86.7% of samples (9.2%² of samples had quantifiable levels of *Campylobacter*). At retail, 25.8% of samples tested positive for *Salmonella* (1.3%³ of samples had quantifiable levels of *Salmonella*) and *Campylobacter* was detected in 89.9% of samples (6.4% of samples had quantifiable levels of *Campylobacter*). NOTE: The limit of quantification for *Campylobacter* is 10 cfu/cm² for chicken portions and 5,000 cfu/carcase for whole chickens. The limit of quantification for *Salmonella* is 13 MPN/100cm² for chicken portions and 65 MPN/carcase for whole chickens.

Research and targeted projects

The Food Authority conducts a number of research projects each year. The aim of these projects is to gather data to inform the Food Authority's future risk assessment work.

During 2018-2019 a number of projects continued on from 2017-2018. These include the fermented beverages project and the *Campylobacter* attribution survey (National project). In addition, in conjunction with local councils, the Food Authority also undertook a survey of retail food outlets in NSW during 2018-2019 as part of the *Campylobacter* reduction strategy.

¹ Originally reported as 9.2%

² Originally reported as 1.5%

³ Originally reported as 1.7%

Fermented beverages

A national survey led by Victoria, was conducted to investigate the alcohol content and labelling of fermented beverages sold in five Australian jurisdictions: Victoria, Queensland, NSW, Tasmania and South Australia. Samples tested included kombucha, water-based kefir, dairy-based kefir and ginger beer. Results, particularly for kombucha and water-based kefir, found a proportion of samples contained excess or undeclared alcohol. The survey report is now available on the Food Standards Australia New Zealand's website. Following the survey, a roundtable meeting was convened between regulators and industry stakeholders to discuss the issue. NSW will continue to monitor the compliance of fermented beverages in the market and take action as necessary.

Campylobacter attribution study

The National *Campylobacter* attribution survey brought together *Campylobacter* isolates collected from humans, animals, and food sources in four states across Australia: NSW, ACT, Queensland and Victoria. Samples from food and animal sources were collected, tested for *Campylobacter*, and if positive, forwarded for whole genome sequencing to improve understanding of the source of the *Campylobacter* and the relationship between food, human and animal isolates. In NSW, 611 food samples were collected. The survey report will be published at later date.

Campylobacter retail survey

Campylobacter is a leading cause of foodborne illness in Australia and world-wide. The 'NSW Government Food Safety Strategy 2015-2021' describes a goal of reducing foodborne illness caused by *Salmonella*, *Campylobacter*, *Listeria* and allergen contamination by 30%. As raw chicken and liver are known sources of *Campylobacter*, this survey attempted to explore if and how *Campylobacter* is transferred to ready to eat (RTE) product.

This on-site survey of retail food businesses involved local council authorised officers answering a questionnaire on the food businesses' food handling practices, undertaking protein swabbing of "clean" surfaces that gave instant indicative results of the surfaces' cleanliness, and taking samples of RTE chicken or liver products which underwent microbiological analysis.

The survey was undertaken by 22 councils and involved 169 retail food premises with 593 swabs taken and 281 food samples analysed. The microbiological analysis involved testing for the presence and level of *Campylobacter*, presence of *Salmonella* & level of *E. coli*.

Of the food samples analysed, 258 were in-scope (RTE chicken & pate). Of these, two (<1%) were contaminated with *Campylobacter* and were at a level of less than 100 cfu/g (the limit of detection for *Campylobacter* enumeration method was 100 cfu/g). Neither *Salmonella* or *E. coli* were detected in these two samples. A further eleven of the 258 samples (4.3%) contained *E. coli* at the level of 3 to 93 MPN/g (the limit of detection for *E. coli* enumeration method was 3 MPN/g). Councils' Authorised Officers conducted follow up work with the premises concerned and further investigation is being planned. *Salmonella* was not detected in any of the 258 samples.

As a result of a research project undertaken in 2018, a factsheet on *Manufacturing Nem Chua Safely* was published on the Food Authority's website. The factsheet can be viewed in the 'Factsheets guides and policies' section under the 'Resource Centre' tab.

Algal biotoxins in wild harvest shellfish

Algae (phytoplankton) are microscopic organisms that are the primary producers at the base of the food chain in almost all aquatic ecosystems. Some algae produce toxic compounds that can accumulate in filter-feeding bivalve shellfish and can be harmful to humans, if consumed. Sampling for potentially harmful algal species occurs weekly when wild harvest beaches are open for collection of pipis by commercial operators. Pipi flesh samples for biotoxin



testing are collected only when potentially harmful species are detected. This process has limited the data available to inform a risk assessment.

The Food Authority undertook a biotoxin survey of wild harvest shellfish in the marketplace. The survey took place during the 2015, 2016 and 2017 wild harvest seasons. The results of the market survey found that 99% of samples tested were below the regulatory limit. When toxin was detected, the predominant toxin group was diarrhetic shellfish toxins (DSTs) (34.06 % of 323 samples were positive). Pips were the main shellfish group sampled and DSTs were detected only in pips (40.6 %, 110 of 271 samples). The survey was published (*Diarrhetic Shellfish Toxin Monitoring in Commercial Wild Harvest Bivalve Shellfish in New South Wales, Australia*) in a peer reviewed journal, available online (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6266617/>). In order to gain more data to develop a risk assessment, the survey was extended to the 2018 and 2019 wild harvest seasons.

During the 2018-2019 financial year, 76 samples of pips were tested for three main algal toxin groups (amnesic shellfish toxin, paralytic shellfish toxins and diarrhetic shellfish toxins) found in NSW coastal waters. Of these, diarrhetic shellfish toxins were detected in 13 samples (maximum 0.18 mg/kg okadaic acid, regulatory limit 0.2 mg/kg okadaic acid).

Projects continuing into the 2019-2020 financial year

Projects continuing into 2019-2020 include:

- Fermented beverages project
- Kilojoule menu labelling verification program (continuing from 2017-2018)
- Algal biotoxins in wild harvest shellfish

Food safety compliance

Food safety compliance activities include:

- Conducting audits and inspections of food businesses
- Investigating breaches in compliance to the Code
- Investigating suspected foodborne illness
- Investigating labelling complaints and compliance
- Addressing issues identified by Food Safety Officers during audits
- Targeted food business or sector projects to increase compliance

These investigations can result in the analysis of food for a wide variety of tests. Enforcement action may be instigated for any non-compliant samples. Between July 2018 and June 2019, a total of 5,095 samples were submitted to DTS and other laboratories (Table 3).

Table 3. Samples submitted for compliance investigations

Category	Number of samples
Samples taken during audits and inspections	41

Foodborne illness investigations	4,010
Complaints and Compliance projects	1,044
Total	5,095

Samples taken during audits and inspections

Samples taken during audits usually consist of raw meat samples that have failed a field test for sulphur dioxide (SO₂), which is not permitted in raw meat (SO₂ is permitted in sausages to a certain level). If a field test is positive, a three-part sample is then taken and submitted to DTS for SO₂ analysis. Some of these samples can also be submitted for meat speciation. Sausage samples are occasionally submitted for SO₂ analysis to ensure they comply with the maximum permitted level in the Food Standards Code of 500 mg/kg.

Between July 2018 and June 2019, 1,598 audits of licensed retail meat businesses were conducted and 31 samples of raw meat from 14 butchers were submitted for SO₂ testing as a result of a positive field test. Twenty-eight of these samples from 13 butchers were positive, with values ranging from 13 to 3,600 mg/kg. Nine samples of sausages and/or sausage meat were taken during audit and submitted for SO₂ analysis and 3 of these had values in excess of the maximum permitted level, with values ranging from 870 to 3,200 mg/kg. Appropriate enforcement action was taken or is planned to be taken for these non-compliant samples.

In addition, a cheese sample taken during an audit underwent microbiological assessment as part of a previous sample's follow-up. Acceptable results were obtained.

Foodborne illness investigations

The Food Authority investigates suspected cases of foodborne illness in partnership with NSW Ministry of Health, local councils, and interstate agencies. Between July 2018 and June 2019, a total of 4,010 food and environmental samples were submitted for testing in response to foodborne illness investigations and their follow up activities. Two notable outbreaks are outlined below:

Salmonella Enteritidis investigation linked to eggs

Salmonella Enteritidis (SE) is a bacterial disease of poultry, and the consumption of eggs contaminated with SE can present a high risk of causing foodborne illness in humans. This illness can be particularly severe for people who are elderly (over the age of 70), young children and those with a weakened immune system. In the past there has been *Salmonella* Enteritidis-related illness cases reported in Australia, however these have been typically in people who have travelled overseas where they became infected.

Since mid-2018, a steady increase in the number of cases of SE illness in humans was observed. These cases have been epidemiologically linked to a locally acquired outbreak of SE illness with most cases reported in NSW. To support the investigation into this illness outbreak, over 100 locally produced and imported foods as well as environmental samples were initially tested for the presence of *Salmonella*. Foods tested included fresh and dried vegetables, seafood, spices, egg-containing foods, nuts and eggs. Environmental samples consisted of swabs, stock feed, water and poultry faecal samples as well as eggs. Samples were collected from a range of settings including food businesses, supermarkets and egg primary production businesses. During the investigation a further 2,072 samples from egg primary production businesses were tested including eggs and environmental samples. As a result, SE was found on thirteen properties which were interconnected by movements of people, eggs or equipment.

As part of the response to the outbreak, the NSW Department of Primary Industries (NSW DPI) increased surveillance and monitoring at egg farms and issued biosecurity directions to individual properties where necessary, including quarantining of the premises to prevent the movement of eggs into the marketplace. Other actions taken included farm depopulation, decontamination and disinfection. Affected properties are unable to recommence egg production until required biosecurity and food safety standards are met. The Biosecurity (*Salmonella* Enteritidis) Control Order was issued on 1 August 2019 to assist in raising long term biosecurity standards.

As a result of the detection of SE, there were 6 consumer level recalls of eggs from implicated properties in NSW and one consumer level recall in Victoria. Consumer advisories and media releases were also issued.

Surveillance and monitoring activities at NSW egg farms will continue into 2020.

Salmonella Typhimurium investigation linked to an egg farm

Salmonella Typhimurium (the most common serovar linked to foodborne illness in Australia) declined by 65% in NSW between 2014 and 2018, as part of efforts to reduce total foodborne salmonellosis by 30% under the NSW Food Safety Strategy 2015-2021. However, *Salmonella* Typhimurium cases plateaued or increased slightly in 2018-19. Much of this increase was found by genetic analysis to be linked to a single egg farm, which was the source of approximately 20% of all *Salmonella* Typhimurium cases in NSW. Several visits to the farm detected the same type of *Salmonella* Typhimurium linked to the human cluster.

Illness was exacerbated further down the supply chain by poor handling of eggs in some businesses, including failure to clean and sanitise surfaces or equipment, and use of raw egg products. The farm implemented additional cleaning and sanitising of farm grading equipment and is looking at vaccination of birds to reduce *Salmonella* Typhimurium. These measures appear to have been successful, with a significant decrease in the type of salmonellosis cases in NSW.

Complaints and Compliance projects

Complaint samples usually result from either a member of the public contacting the Food Authority's helpline or from local council. Samples may be acquired from the complainant or from retail outlets, manufacturers or importers. Common complaints include unlabelled allergens, allergen contamination or poor labelling. Compliance projects usually result from an incident, increase in unknown illnesses, increase in a particular issue seen during audits or inspections or an overseas or interstate event.

Between July 2018 and June 2019, 1,044 samples were submitted for testing due to a complaint or compliance project.

Complaint samples

Between July 2018 and June 2019, 76 samples were submitted for testing due to a complaint. Of the 76 samples, eight samples were submitted for testing due to complaints regarding allergens in food. As a comparison, for the previous period (July 2017 to June 2018), 79 samples were submitted for testing due to a complaint, of which 76 samples were due to complaints regarding allergens in food.

Compliance projects

A significant compliance project conducted this year involved a review of the prevalence of *Listeria* in rockmelon packhouses and melons. The details are as follows:

Listeria prevalence in rockmelon packhouse environments and melons

Between November 2018 and April 2019, NSW DPI delivered food safety training workshops for rockmelon growers in NSW and conducted pre- and post-harvest sampling of melons and packhouse environments to ensure that growers were meeting food safety obligations.

As part of this work, over 940 melon and environmental samples were collected to monitor the prevalence of *Listeria monocytogenes*, *Salmonella*, and standard plate count pre- and post-wash. The project showed that growers were delivering a very safe product, with no *L. monocytogenes* or *Salmonella* detected on any fruit. Only one sample was positive for *L. monocytogenes*, which was a boot swab taken from a dis-used cool room. The only *Salmonella* detected was in a sample of untreated water.

While it may be difficult to attribute a direct correlation with the findings of this project, listeriosis cases in NSW have declined sharply since improved food safety measures have been implemented across the melon industry.



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