ANNUAL FOOD TESTING REPORT 2020-2021

NSW GOVERNMENT Food Authority

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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.

BVAQ, formerly DTS Food Assurance (DTS), is the primary testing provider for the Food Authority. Testing services provided by BVAQ include microbiological, chemical, foreign object identification, allergen contamination and nutritional composition. BVAQ 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 2020-2021 included Elizabeth Macarthur Agricultural Institute (EMAI) for microbiological analyses and NSW Health Pathology for serotyping and whole genome sequencing.

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 2020 and June 2021, a total of 2,912 samples were submitted for testing: 2,679 samples were submitted to BVAQ where 4,371 individual tests were conducted and 233 samples were sent to other laboratories where 787 individual tests were conducted (Table 1). The number of samples was lower during this period as a result of restriction of movement due to the COVID-19 pandemic. Sample types analysed included meat, seafood, dairy, plant products, packaged food, eggs, food from retail outlets and environmental samples (e.g. swabs). Many 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, chemical assessment, pH, water activity and allergens.

Table 1. Number of samples per category

Category	Number of samples
Verification programs	350
Research and targeted surveillance projects	464
Food safety compliance	2,098
Total	**2,912**

Serotyping is a process that identifies a subspecies by its distinctive surface structures. *Salmonella* subspecies are distinguished by the chemical make-up of the 'O' antigen (outermost surfaces of the bacterial cell) and the protein content of the 'H' antigen (part of the bacterium's flagella). Each subspecies has a unique 'O' and 'H' combination. For example, the serotyping result for *Salmonella* Infantis is 6,7:r:1,5.

Whole genome sequencing (WGS) is a process where the unique genome of a microorganism, its DNA (deoxyribonucleic acid) sequence, is determined. The genome sequence of one microorganism can be compared with that of another to determine how closely related they are. This is of particular use when investigating foodborne illness outbreaks as it can link bacteria isolated from suspected foods with isolates from patients' specimens.

In NSW, all clinical and environmental *Listeria monocytogenes* isolates are analysed by WGS to determine their relatedness and search for clusters of illness and potential sources. Similarly, all isolates of *Salmonella* Typhimurium and *Salmonella* Enteritidis detected from NSW Food Authority sampling and clinical isolates are sequenced for trends and cluster identification. Other *Salmonella* serovars or foodborne pathogens are sequenced where there is a strong need (such as an increase in human cases in NSW and/or Australia).

From 1 July 2020 to 30 June 2021, 93 isolates were submitted to NSW Health Pathology for identification by serotyping and WGS. These isolates were *Salmonella* or *Listeria* found in food or environmental samples that had been submitted for testing due to a foodborne illness investigation, a verification program or a surveillance program. The 93 bacterial isolates are not included in the sample numbers in Table 1 as they arise from testing of food or environmental samples already accounted for in the sample numbers in Table 1.

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 and plant products. 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 2020 and June 2021, a total of 61 samples were randomly collected from 27 businesses or retailers and submitted for testing (Table 2). This number of samples is lower than in previous years as sampling was suspended on several occasions due to COVID-19 movement restrictions during the year.

All products analysed were found to be compliant.

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

Scheme	No. of samples tested	No. of non-compliant samples (%)
Dairy	22	0 (0%)
Meat	19	0 (0%)
Plant products	20	0 (0%)
Total	**61**	**0 (0%)**

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 2020 and June 2021, a total of 85 whole chickens and chicken portions were collected from processing plants and 178 chicken portions were collected from retail outlets. This number of samples is lower than in previous years as sampling was suspended on several occasions due to COVID-19 movement restrictions during the year.

At the processing plants, *Salmonella* was detected in 14.1% of samples (no samples had quantifiable levels of *Salmonella*) and *Campylobacter* was detected in 89.4% of samples (9.4% of samples had quantifiable levels of *Campylobacter*). At retail, 7.9% of samples tested positive for *Salmonella* (no samples had quantifiable levels of *Salmonella*) and *Campylobacter* was detected in 83.1% of samples (3.9% 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.

UCFM verification program

Uncooked Comminuted Fermented Meat (UCFM) is a comminuted meat product manufactured by a series of processes including fermentation and maturation (with smoking and/or heat treatment as optional steps). In addition, the final product has not had its core temperature maintained at 65°C for at least 10 minutes or an equivalent combination of time and higher temperature during production.

In NSW, all UCFM products for sale must be produced in accordance to Standard 4.2.3 of the Food Standards Code (the Code) and the NSW Food Regulation (2015).

The Food Authority has various requirements for UCFM manufacture, including that each UCFM be manufactured in accordance with an approved pro forma, which is a documented and verified manufacture process. Verification testing of one sample from each of the first two batches of a product manufactured under a new pro forma is required and these two samples are submitted to the Food Authority for testing. From 1 July 2020 to 30 June 2021, a total of 26 UCFM samples were submitted for verification testing.

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.

Mandatory labelling for lupin as an allergen survey

On 25 May 2017 lupin was added to Standard 1.2.3 of the Food Standards Code (the Code) and food businesses were given 12 months from this date to meet mandatory allergen labelling requirements for any food products containing lupin. The use of lupin in its many forms, including kernels (made into kibble and flour), fibre, protein isolates and concentrate, is increasing in products manufactured and imported in NSW and the rest of the world. The survey was conducted to assess the level of compliance to the addition of lupin to mandatory allergen labelling. Also, making lupin a notifiable food allergen serves primarily to highlight a food safety risk for allergic consumers. One concern found in the research is the potential for people with allergies to other legume foods such as peanuts, to also be allergic to lupin.

From September to December 2020, a total of 124 packaged samples were tested for lupin. Products included in the survey were flours, baked goods, sauces, pasta and health foods (foods marketed to vegans, vegetarians and people with food allergies and intolerances). All products were deemed compliant as no sample had a testing result that exceeded the threshold for follow up action.

A labelling assessment was also carried out for 109 products and 86% (94/109) of them had compliant labels according to the Code. Follow up action was required for fifteen of the products. Fifteen of the 124 samples that were tested for lupin did not undergo a labelling assessment as part of this survey. This is because these labels were already assessed as part of another survey (plant-based alternative product survey).

The survey report is being finalised and will be available on the Food Authority's website.

Salmonella Enteritidis (SE) surveillance on egg farms

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 have been SE-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 were epidemiologically linked to a locally acquired outbreak of SE illness with most cases reported in NSW. During 2018-2019 a major investigation was conducted which involved testing a range of foods and environmental samples from a range of settings for the presence of *Salmonella*. During the investigation 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 2018-19 SE outbreak associated with egg farms, the NSW Department of Primary Industries (NSW DPI) increased SE surveillance and monitoring at egg farms. These surveillance activities continued in 2021-2021 and a total of 102 samples were tested. Surveillance activities will continue in 2021-2022.

Salmonella Enteritidis (SE) mandatory testing

In August 2019, the Biosecurity (*Salmonella* Enteritidis) Control Order 2019 came into effect. The Control Order aimed to prevent, eliminate, minimise and manage the biosecurity risk posed or likely to be posed by the spread of *Salmonella* Enteritidis (SE) in NSW.

The Control Order was amended on 30 June 2020 to include a requirement for all licensed egg business in NSW to undertake mandatory SE testing from 1 July 2020. Sampling and testing are required every 12 to 15 weeks for the duration of the Control Order. This testing may occur within the National *Salmonella* Enteritidis Monitoring and Accreditation Program (NSEMAP), or at either EMAI or Birling Avian Laboratories. NSW Department of Primary Industries (NSW DPI) is funding the cost of laboratory testing conducted by EMAI and Birling Avian Laboratories for the first two years of the program.

From 1 July 2020 to 30 June 2021, a total of 230 samples were tested at EMAI and Birling Avian Laboratories. SE mandatory testing activities will continue in 2021-2022.

Plant-based alternative products survey

The market for plant-based products as alternatives to animal products (e.g. meat) has increased over recent years. Information on the microflora of plant-based alternative products that mimic meat is not widely available in the scientific literature. Reports available mainly focus on the nutritional aspects or consumers' acceptance. Therefore, a survey was carried out to gather information on the microbiological safety of these products and their labelling compliance with the Australia New Zealand Food Standards Code (the Code).

Last year, samples of plant-based alternative products were obtained and tested for a range of microorganisms, pH and water activity. Testing results show that there was no microbiological safety concern with the products included in this survey. In addition, approximately half of the products had compliant labels according to the Code. The most common non-compliance was observed with nutritional claims where the manufacturer used non-permitted or unsubstantiated claims. Follow-up action was taken accordingly.

The survey report has been finalised and is available on the Food Authority's website here: https://www.foodauthority.nsw.gov.au/plant-based-alternative-products-survey

Projects continuing into the 2021-2022 financial year

Projects continuing into 2021-2022 include:

- SE surveillance testing
- SE mandatory testing

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 2020 and June 2021, a total of 2,098 samples were submitted to BVAQ and other laboratories (Table 3).

Table 3. Samples submitted for compliance investigations

Category	Number of samples
Samples taken during audits and inspections	15
Foodborne illness investigations	955
Complaints and Compliance projects	1,128
Total	**2,098**

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 (SO_2), which is not permitted in raw meat (SO_2 is permitted in sausages to a certain level). If a field test is positive, a three-part sample is then taken and submitted to BVAQ for SO_2 analysis. Some of these samples can also be submitted for meat speciation. Sausage samples are occasionally submitted for SO_2 analysis to ensure they comply with the maximum permitted level in the Food Standards Code of 500 mg/kg.

Between July 2020 and June 2021, 1,315 audits of licensed retail meat businesses were conducted and four samples of raw meat from three butchers were submitted for SO_2 testing as a result of a positive field test. All four samples were non-compliant, with SO_2 values ranging from 230 to 570 mg/kg. Appropriate enforcement action was taken or is planned to be taken for the non-compliant samples.

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 2020 and June 2021, a total of 955 food and environmental samples were submitted for testing in response to foodborne illness investigations and their follow up activities.

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 2020 and June 2021, a total of 1,128 samples were submitted for testing due to a complaint or compliance project.

Complaint samples

Between July 2020 and June 2021, 146 samples were submitted for testing due to a complaint. Of the 146 samples, 30 samples were submitted for testing due to complaints regarding allergens in food. As a comparison, for the previous period (July 2019 to June 2020), 67 samples were submitted for testing due to a complaint, of which 43 samples were due to complaints regarding allergens in food.

Compliance projects

A significant compliance project conducted this year was in relation to the egg farm clearance testing.

Salmonella Enteritidis (SE) clearance testing on egg farms

As part of the response to the 2018-2019 SE outbreak associated with egg farms, the NSW DPI increased SE surveillance and monitoring at egg farms. Biosecurity directions were issues 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.

Clearance sampling and testing for SE was conducted on infected properties after decontamination and disinfection, to allow them to recommence egg production. A total of 970 samples were tested. Clearance activities will continue in 2021-2022.