Food Authority

Annual Food Testing Report 2022-2023

November 2023

Table of Contents

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. It 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 effectively manage the prevention of foodborne illness and maintain food safety.

BVAQ is the Food Authority's primary testing provider. Its services 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 its primary testing provider and other laboratories. Other laboratories used in 2022-23 included Elizabeth Macarthur Agricultural Institute (EMAI) for microbiological analyses, NSW Health Pathology for serotyping and whole genome sequencing, and Symbio Laboratories for shellfish toxin testing.

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 with 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
- provide scientifically based industry communication, training and advice
- provide scientifically based consumer advice and information
- assist local government with concerns and complaints
- assist with the development of emergency management framework.

A year in review

Between July 2022 and June 2023, a total of 3,059 samples were submitted for testing: 1,813 samples were submitted to BVAQ, where 4,132 individual tests were conducted. A further 1,246 samples were sent to other laboratories, where 3,784 individual tests were conducted (Table 1). Sample types analysed included meat, seafood, shellfish, dairy, plant products, packaged food, eggs and environmental samples (for example 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	520
Research and targeted surveillance projects	784
Food safety compliance	1,715
Total	**3,059**

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 and for *Salmonella* Typhimurium, the result is 1,4,5,[12]:i:1,2.

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 are sequenced for trends and comparison with clinical isolates for 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 2022 to 30 June 2023, 251 samples were submitted to NSW Health Pathology for identification by serotyping and WGS. These samples were *Salmonella* or *Listeria monocytogenes* bacterial isolates from food or environmental samples that had been submitted for testing due to a foodborne illness investigation, a verification program or a surveillance program. These 251 bacterial isolate samples are in addition to the sample numbers in Table 1 as they arise from testing of food or environmental samples 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, plant products and seafood. RTE foods that were manufactured or packaged under the Schemes were purchased from retail outlets and tested against the requirements set out in the Food Safety Schemes Manual.

Between July 2022 and June 2023, a total of 137 samples were randomly collected from retailers and submitted for testing (Table 2).

Eight products from 5 different manufacturers were found to be non-compliant due to the following:

- seven samples of soft cheese contained *E. coli* greater than the regulatory limit of 10 cfu/g
- one sample of pasteurised milk contained *E. coli* greater than the regulatory limit of 1 cfu/mL.

Follow-up actions for these non-compliant results included re-sampling of product for analysis and referral to the compliance team for further investigation.

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

Scheme	No. of samples tested	No. of non-compliant samples (%)
Dairy	78	8 (10%)
Meat	50	0
Plant products	5	0
Seafood	4	0
Total	**137**	**8 (6%)**

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 with Standard 4.2.3 of the Food Standards Code (the Code) and the NSW Food Regulation (2015).

The Food Authority requires each UCFM to be manufactured in accordance with an approved pro forma, which is a documented and verified manufacturing process. Verification testing is required for 1 sample from each of the first 2 batches of a product manufactured under a new pro forma. The 2 samples must be submitted to the Food Authority for testing. From 1 July 2022 to 30 June 2023, a total of 57 UCFM samples were submitted for verification testing. All samples were microbiologically satisfactory.

Manufacturers and wholesalers verification program

The Manufacturer/Wholesaler Food Inspection Program (MWIP) was introduced to ensure that food businesses not covered by the NSW Food Authority's licensing or local government inspections are meeting their legal responsibilities in keeping food safe for consumers. Businesses covered in the MWIP are those that produce and sell foods by wholesale with limited or no retail sales component. These businesses may include home-based businesses. Information about the program is on the Food Authority's website.

An ongoing verification program for this sector was introduced in July 2022. The program aims to provide a snapshot of the microbiological quality and/or the presence of chemical contaminants in products manufactured by businesses under the MWIP. The data collected throughout this program will be used to gauge the current situation and determine whether a larger or more targeted survey is needed.

Due to the variety of products produced by businesses in this sector, each financial year focuses on 3 to 4 product categories only. Sampling in 2022-23 focused on:

- apple juice: not from concentrate, single fruit, cloudy or clear
- fermented beverages, such as kombucha and water kefir, and
- ready-to-eat (RTE) salads with dressing.

Apple juice

- A total of 140 samples of not from concentrate (NFC) apple juice were tested for patulin.
- There are currently no maximum levels (MLs) for patulin in the Code, however, Codex has set an ML of 50 µg/kg for patulin in apple juice, which has been adopted by several overseas food regulatory authorities. This limit was used in the analysis of the products tested.
- Forty samples (29%) contained concentrations of patulin greater than 50 µg/kg. Advisory letters were sent to the manufacturers of these products.
- The labels of the products were assessed against Part 1.2 of the Code. Almost all labels were found to be compliant. Two products had minor labelling non-compliance - that is, the word 'average' was not on the nutritional information panel (NIP). No follow-up action was required.

Fermented beverages

- A total of 62 fermented beverages products (water-based kefir, kombucha, kvass, tonic and shrub) were tested.
- For the purpose of this project, the limit for alcohol for brewed soft drinks of 1.15% ABV was used as a guide (Standard 2.6.2 – Non-alcoholic beverages and brewed soft drinks of the Code). In addition, the sample label was assessed against Part 1.2 and Standard 2.7.1 – Labelling of alcoholic beverages and food containing alcohol of the Code. The compliance with the alcohol labelling requirements was assessed based on the alcohol content at the time of testing.
- 23 (37%) products tested had an ethanol level greater than 0.5% but less than 1.15% ABV and 2 products did not have alcohol labelling, which made them non-compliant.
- A further 7 products (11%) had ethanol level greater than 1.15% ABV, which made them non-compliant. These 7 products were all kombucha.
- Of the 62 labels assessed, only 12 were fully compliant with the requirements in the Code. Main issues identified were the absence of characterising ingredients, non-compliant nutrition information panel (NIP) and non-compliant or unsubstantiated nutritional and health claim.
- Follow up actions included sending advisory letters to manufacturers with labelling non-compliance (8) and inspections (7).

RTE salads with dressing

- A total of 123 RTE salad with dressings were tested.
- 98% (121/123) of products were categorised as good or acceptable when assessed against the microbiological guideline for RTE foods.
- One product was categorised as unsatisfactory because *B. cereus* was detected at the level of 1,400 cfu/g. One product was categorised as potentially hazardous because *L. monocytogenes* was detected. The manufacturers of these products were contacted, and the issue was investigated.
- Eight products (6.7%) had minor labelling non-compliance. One advisory letter was sent.

Research and targeted projects

Vibrio parahaemolyticus in NSW oysters survey (2022-2024)

Vibrio are naturally occurring marine bacteria present in the marine environment. Illness outbreaks in consumers of raw shellfish have historically been associated with 2 species of *Vibrio*. In April 2022, a survey was initiated in 5 major NSW oyster growing areas to determine the prevalence and level of total and pathogenic *Vibrio parahaemolyticus*. The growing areas were selected in geographically diverse regions of the state. While Vibrio related foodborne illness outbreaks associated with NSW oysters are extremely rare, the potential for future outbreaks warrants investigation given the potential health impacts. The Food Standards Code does not specify regulatory limits for *V. parahaemolyticus*. Internationally, where regulatory limits or guidance values have been established, there is a very wide range. This is likely due to the weak relationship between *Vibrio* levels and illness outbreaks.

The survey will provide information on levels of *V. parahaemolyticus* present in samples and polymerase chain reaction (PCR) analysis for virulence markers. The data will inform the risk classification of key NSW shellfish productions areas and the potential for the risk profile to change if new shellfish species are cultured. Between 11 July 2022 and 26 June 2023, 342 samples were collected to support this baseline study. Results reported to date have been “not detected” or low level detections of *V. parahaemolyticus.* A final survey report will be prepared following completion of this survey, which is due to run until 2024.

Salmonella Enteritidis (SE) mandatory testing

In August 2019, the Biosecurity (*Salmonella* Enteritidis) Control Order 2019 came into effect. The 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 businesses in NSW to undertake mandatory SE testing from 1 July 2020. Sampling and testing is required every 12 to 15 weeks for the duration of the Control Order. This testing can 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) funded the cost of laboratory testing conducted by EMAI and Birling Avian Laboratories for the first 2 years of the program.

On 23 June 2022, the Biosecurity (SE) Control Order was amended and extended to 30 June 2024. NSW DPI will continue to fund the testing until then.

From 1 July 2022 to 30 June 2023, a total of 284 samples were tested at EMAI and Birling Avian Laboratories. SE mandatory testing activities will continue in 2023-2024.

Salmonella Enteritidis (SE) surveillance testing

As part of the response to the 2018-19 *Salmonella* Enteritidis (SE) outbreak, NSW DPI undertakes SE surveillance and monitoring activities at egg farms and issues 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.

Surveillance activities at NSW egg farms occurred in 2022-23 and a total of 96 samples were tested. Surveillance activities will continue in 2023-2024 when required.

Continuing projects

Projects continuing into the 2023-24 financial year include:

- *Vibrio parahaemolyticus* in NSW oysters survey
- SE mandatory testing on egg farm
- SE surveillance on egg farm testing (when required)

Food safety compliance

Food safety compliance activities include:

- conducting audits and inspections of food businesses
- investigating breaches of compliance with 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 non-compliant samples. Between July 2022 and June 2023, a total of 1,755 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	96
Foodborne illness investigations	1,101
Complaints and Compliance projects	558
Total	**1,755**

Samples taken during audits and inspections

Samples taken during audits usually consist of raw meat that has failed a field test for sulphur dioxide (SO_2). SO_2 is not permitted to be used in raw meat. It is permitted to be used in sausages to a certain level. If a field test is positive, a 3-part sample is taken and submitted to BVAQ for SO_2 analysis. Some of these samples can also be submitted for meat speciation to determine whether the meat species matches what is on the label. 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 2022 and June 2023 1,267 audits of licensed retail meat businesses were conducted, which is an increase on the previous year. Ninety-six samples of raw meat from 43 butchers were submitted for SO_2 testing as a result of a positive field test. Ninety-three samples were non-compliant, with SO_2 values ranging from 17 to 5,700 mg/kg. The number of non-compliant samples is also an increase from the previous year.

During this period, NSW DPI conducted an audit program of licensed low risk retail meat facilities throughout NSW to ensure they were compliant with legislative requirements outlined in the Food Act 2003. This program accounts for the increase in audit numbers and non-compliant samples.

Appropriate enforcement action has been taken for some of the non-compliant samples, including issuing 26 penalty infringement notices. Further follow-up enforcement actions are pending.

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 2022 and June 2023, a total of 1,101 food and environmental samples were submitted for testing in response to foodborne illness investigations and their follow up activities.

A notable investigation is outlined below.

Poppy seed tea investigation

In November 2022, a multijurisdictional outbreak investigation occurred on contaminated poppy seeds following 13 people across 3 jurisdictions reporting adverse reactions after consuming poppy seed tea. The Food Authority worked with NSW Health, Queensland Health and Victorian Health to investigate the likely source of contamination. Specialist authorised officers from the Food Incident Response and Complaints Unit conducted extensive marketplace sampling of poppy seeds and 21 samples were tested for levels of Thebaine (and opiate alkaloid). High levels of Thebaine were detected and 6 different brands of poppy seed were recalled and removed from retail sale as they were unfit for human consumption.

Complaints and compliance projects

Complaint samples usually result from either a member of the public contacting the Food Authority's helpline or from a 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, an increase in unknown illnesses, an increase in a particular issue seen during audits or inspections, or an overseas or interstate event.

Between July 2022 and June 2023, a total of 558 samples were submitted for testing due to a complaint or compliance project.

Complaint samples

Between July 2022 and June 2023, 100 samples were submitted for testing due to complaints. This number is less than the previous year (318 samples were submitted in 2021-2022).

Compliance projects

There was no egg farm clearance testing or egg farm individual biosecurity direction clearance testing conducted during this period.