



Australian Government

MSL975050 Perform food analyses

Release: 1

MSL975050 Perform food analyses

Modification History

Release	Comments
Release 1	This version was released in <i>MSL Laboratory Operations Training Package Release 2.0</i>. Supersedes and equivalent to MSL975022 Perform food analyses. Changes to performance criteria. Foundation skills information added. Range of conditions removed. Equivalent outcome.

Application

This unit of competency describes the skills and knowledge to analyse the nutrient and ingredient composition of foods and the identification and quantification of both chemical and biological contaminants within raw and processed foods. These tests may involve complex sample preparation followed by multi-staged and/or multi-instrumental analysis, immunoassay and computer-based nutrient analysis.

This unit applies to laboratory technical officers and analysts working in the food and beverage processing industry sectors. All operations and analytical methods must comply with relevant standards, appropriate procedures and/or workplace requirements. The unit covers tests and procedures that are performed in a full or partially computerised and automated laboratory environment. Although a supervisor may not always be present, the technical worker will follow standard operating procedures (SOPs) that clearly describe the scope of permitted practice, including varying workplace/test procedures and communicating results to people outside the laboratory.

No licensing or certification requirements exist at the time of publication. However, regulations and/or external accreditation requirements for laboratory operations exist, so local requirements should be checked. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

MSL974020 Perform food tests

Competency Field

Testing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

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|---|---|-----|---|
| 1 | Establish client needs and schedule analysis | 1.1 | Liaise with client or sample provider to determine client needs and sample history |
| | | 1.2 | Record sample description, compare with specification and record and report discrepancies |
| | | 1.3 | Identify non-routine samples and the possible need to vary workplace procedures |
| | | 1.4 | Confirm any proposed variations and document approved changes |
| | | 1.5 | Schedule analysis using workplace procedures |
| | | | |
| 2 | Prepare samples and standards | 2.1 | Obtain a representative analytical portion of the laboratory sample |
| | | 2.2 | Prepare sample in accordance with testing requirements |
| | | 2.3 | Prepare validation checks and/or calibration standards for analytical portion |
| | | 2.4 | Use specialised procedures for ultra-trace sample and standard preparation |
| | | | |
| 3 | Set up and optimise instrument | 3.1 | Perform pre-use and safety checks using workplace procedures |
| | | 3.2 | Start up and condition the instrument using workplace procedures |
| | | 3.3 | Optimise instrumental parameters to suit sample and test requirements |
| | | 3.4 | Check calibration status of instrument and perform calibration using specified standards and procedures |
| | | 3.5 | Clean, care for and store equipment and consumables in accordance with workplace procedures |

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
4 Perform analysis	4.1 Measure analyte response for standards, validation checks and samples 4.2 Conduct sufficient measurements to obtain reliable data 4.3 Return instruments to standby or shutdown condition 4.4 Store unused/prepared laboratory samples for future reference
5 Process and analyse data	5.1 Use controls and reference standards to confirm the integrity of biomolecular sample preparation and procedures 5.2 Troubleshoot basic procedure, reagent or equipment problems which have led to atypical data or results
6 Maintain laboratory records	6.1 Make entries on report forms or into a laboratory information management system accurately calculating, recording or transcribing data as required 6.2 Ensure traceability of sample from receipt to reporting of results

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Numeracy skills to:
 - calculate potential sources of uncertainty
 - calculate analyte concentrations using appropriate equations, units, uncertainties and precision.

Other foundation skills essential to performance are explicit in the performance criteria of this unit.

Unit Mapping Information

Equivalent to MSL975022 Perform food analyses, Release 1.

Links

Training Package Companion Volumes -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa>

Assessment Requirements for MSL975050 Perform food analyses

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- analysed the nutrient and ingredient composition of 2 different foods containing a minimum of 2 different ingredients in each using at least 1 of the following analytical instruments:
 - spectrometric instruments
 - chromatographic techniques and instruments
 - gas chromatography mass spectroscopy (GC-MS)
 - electrophoretic techniques
 - electrometric techniques
- accurately identified and quantified chemical and biological contaminants in at least 1 raw food sample and at least 1 processed food sample
- safely prepared complex samples using at least 3 different processes including at least 2 of the following:
 - grinding and milling
 - preparation of discs
 - digestion
 - extracting
 - refluxing
 - degassing
 - enzymatic treatment
 - washing and drying
 - ashing and temperature equilibration
 - precipitation and centrifugation
 - filtration
 - flocculation

- evaporation.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- scope and purpose of analysing nutritional/ingredient composition including:
 - optimising production processes
 - nutritional information
 - labelling requirements
 - food safety
 - establishment, monitoring and troubleshooting of the hazard analysis and critical control point (HACCP) process
- analyses commonly used for additive and nutrient composition and identification of contaminants
- general composition of common food and beverages
- key food processing and preservation techniques, packaging and controlled atmosphere storage and their effect on nutrients
- food labelling regulations and their implications for nutritional claims
- sample preparation methods and correct storage conditions for specific food samples and tests relevant to job role
- principles and purpose of test methods implemented (why they are used and what they demonstrate)
- technological advances that include automation
- function of key components of the equipment/instrument used
- effects on the test of modifying equipment/instrument variables
- identification of any hazards associated with the samples and/or analytical chemicals
- basic procedure and equipment troubleshooting techniques:
 - equipment maintenance procedures
 - calculation steps to give results in appropriate units and precision
 - sources of error in specific tests and reproducibility and accuracy of commonly used test method for nutrient analysis
- impact of public perception of food safety and nutrition on food analysis
- requirements including genetically modified foods, food irradiation, antibiotics and specific nutrient composition
- nature, structure and function of food additives
- food allergies and intolerances
- glycaemic index (GI) and its significance
- significance of digestion and absorption of macro and micro-nutrients in food and the implications of food additives and fortification on absorption of nutrients,
- awareness of environmental sustainability issues as they relate to the work task
- legal, ethical and work health and safety (WHS) requirements specific to the work task including traceability, confidentiality and security requirements of all client information, and laboratory data and records.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
 - a standard laboratory with appropriate analytical instruments, laboratory reagents and equipment and samples
 - standard operating procedures (SOPs) and test methods.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

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