



Australian Government

MSL975048 Apply routine spectrometric techniques

Release: 1

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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 MSL975020 Apply routine spectrometric techniques. Conditional/optional prerequisite removed – code retained. Changes to elements and performance criteria. Range of conditions removed. Assessment requirements amended.

Application

This unit of competency describes the skills and knowledge to analyse samples using routine spectrometric techniques. The unit also includes establishing client needs for routine and non-routine samples, optimising workplace procedures and instruments for specific samples, obtaining valid and reliable data and reporting test results. Personnel are required to recognise atypical test data/results and troubleshoot common analytical procedure and equipment problems.

This unit applies to technical officers working in all industry sectors, government agencies and research laboratories. All operations and analytical methods must comply with relevant standards, appropriate procedures and/or workplace requirements. Although a supervisor may not always be present, the technician 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

MSL974019 Perform chemical tests and procedures

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 | Record sample description, compare with specification and record and report discrepancies |
| | | 1.2 | Identify non-routine samples and the possible need to vary workplace procedures |
| | | 1.3 | Seek advice from supervisor about any proposed variations and document all approved changes |
| | | 1.4 | 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 for analytical portion |
| | | | |
| 3 | Set up and optimise instrument | 3.1 | Perform pre-use and safety checks in accordance with 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, as required |
| | | 3.5 | Clean, care for and store equipment and consumables in accordance with workplace procedures |
| | | | |
| 4 | Perform analysis | 4.1 | Measure analyte response for standards, validation checks and samples |
| | | 4.2 | Conduct sufficient measurements to obtain reliable data |

Elements describe the essential outcomes.

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

4.3 Return instruments to standby or shutdown condition as required

5 Process and analyse data

5.1 Use controls and reference standards to confirm the integrity of 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 Record 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.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Equivalent to MSL975020 Apply routine spectrometric techniques, Release 1.

Links

Training Package Companion Volumes -

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

Assessment Requirements for MSL975048 Apply routine spectrometric techniques

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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:

- prepared samples using at least 3 different processes
- analysed at least 3 different samples using spectrometric techniques to obtain valid and reliable data.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- relationship of chemical structure to electromagnetic radiation absorption, spectrometric principles and concepts related to instrumentation operation and testing
- use of different spectrometric methods for qualitative and quantitative analysis and preparation of specific samples relevant to job role
- principles and purpose of test methods implemented (why they are used and what they demonstrate)
- handling of unstable or hazardous chemicals and samples and the fragile and labile nature of materials used in job role
- calculation steps to give results in appropriate accuracy, precision, uncertainty and units
- function of key components of the equipment and effects on spectra of modifying and optimising instrumental variables
- determination of and, if appropriate, removal of any contaminants, impurities or interfering substances
- typical preparation of sample relevant to job role
- workplace procedures for:
 - equipment operation and troubleshooting

- basic equipment maintenance
- common analytical procedure and equipment problems:
 - dirty or contaminated sample cells
 - inappropriate selection of wavelength
 - problems with interfering or complexing substances
 - incomplete atomisation of analyte
 - poor resolution of peaks
 - poor sensitivity
 - need to dilute samples
- technological advances that include automation
- 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
 - appropriate spectrometers, laboratory reagents and equipment, standard operating procedures (SOPs) and test methods.

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

Links

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