



Australian Government

MSL975053 Perform complex laboratory testing of forensic samples

Release: 1

MSL975053 Perform complex laboratory testing of forensic samples

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 MSL975025 Perform complex laboratory testing of forensic samples. Foundation skill information added. Range of conditions removed. Assessment requirements amended.

Application

This unit of competency describes the skills and knowledge to perform complex laboratory testing of samples that may be used as forensic evidence. Competency includes the ability to establish client needs for routine and non-routine forensic samples, select suitable techniques and methods and modify them if required, obtain valid and reliable data, and report test results. Personnel are required to recognise atypical test data/results, troubleshoot common analytical procedure and equipment problems and ensure all testing and reporting meets judicial requirements.

This unit applies to technical officers working in all industry sectors and government agencies, such as food, forensic, medical and environmental laboratories. The term forensic is used to describe tests which may have legal implications, such as those used to verify claims for insurance companies.

Complex forensic laboratory tests are non-routine and may require the development of new or modified methods. They require a high degree of analytical skill and knowledge, or practical experience required to perform the analysis and interpret the results. Complex forensic tests include all forms of comparative, evaluative, analytical and optical (visual) methods and techniques. They can be performed on specialised analytical instruments and include tests such as DNA profiling, gunshot residue analysis using scanning electron microscopy energy dispersive X-ray spectroscopy (SEM-EDX), identification of accelerant residue samples from arson attacks using gas chromatography mass spectroscopy (GC-MS), and explosive residue analysis.

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 technical officer will follow standard operating procedures (SOPs) that clearly describe the scope of permitted practice, including modifying 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

Nil

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 | Obtain evidential material/samples following accepted chain of custody procedures |
| | | 1.2 | Record sample description, compare with specification and record and report discrepancies |
| | | 1.3 | Evaluate samples and select appropriate laboratory procedure from accepted standard forensic techniques and validated scientific methods |
| | | 1.4 | Identify the possible need to modify workplace techniques or methods, for example, to ensure recovery of sample materials |
| | | 1.5 | Seek advice from supervisor about any proposed variations and document all approved changes according to workplace quality system and judicial requirements |
| | | 1.6 | Schedule analysis using workplace procedures |
| 2 | Prepare samples and standards | 2.1 | Obtain a representative analytical portion of the sample |
| | | 2.2 | Prepare sample in accordance with testing requirements |
| | | 2.3 | Prepare validation checks and/or calibration standards for analytical portions |

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
3 Perform analysis	3.1 Perform laboratory examination in accordance with validated technique or method on standards, validation checks and samples 3.2 Conduct sufficient testing to obtain reliable data 3.3 Perform tests according to workplace requirements for timeframe and cost 3.4 Troubleshoot technique or method problems which have led to atypical data or results
4 Process and analyse data	4.1 Confirm data is the result of valid measurements 4.2 Perform any required calculations and ensure results are consistent with standards or estimations and expectations 4.3 Record results with the appropriate accuracy, precision, uncertainty and units 4.4 Draw conclusions from examination of results according to accepted forensic practices and documented requirements 4.5 Review laboratory methodology and test results
5 Maintain a safe work environment	5.1 Identify risks, hazards, safety equipment and control measures associated with sample handling, preparation and analytical method 5.2 Use personal protective equipment (PPE) and safety procedures specified for test method and materials to be tested 5.3 Minimise the generation of waste and environmental impacts 5.4 Safely dispose of laboratory waste 5.5 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.

6 Maintain laboratory records and report results

- 6.1 Enter approved data and results into laboratory information management system (LIMS) according to workplace quality system and judicial requirements
- 6.2 Maintain equipment logs in accordance with workplace procedures
- 6.3 Maintain security, integrity and traceability of samples and documentation
- 6.4 Prepare reports for presentation of evidence and communicate results to appropriate personnel

Foundation Skills

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

- Learning skills to:
 - prioritise the evaluation of items of evidence to ensure sample integrity is maintained
 - apply theoretical knowledge and deductive processes to draw conclusions from test results.

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

Unit Mapping Information

Equivalent to MSL975025 Perform complex laboratory testing of forensic samples, Release 1.

Links

Training Package Companion Volumes -

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

Assessment Requirements for MSL975053 Perform complex laboratory testing of forensic samples

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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:

- safely and effectively performed complex laboratory testing of 3 different forensic samples to produce valid and reliable results.

Knowledge Evidence

- There must be evidence the candidate has knowledge of:
- terminology and principles of locating, recording, collecting, storing, transporting, testing and reporting forensic samples and evidence
- legal, regulatory, policy, procedural and quality system requirements for the collection, preservation, security, continuity and disposal of forensic samples and evidence (exhibits)
- potential limitations of own specialist knowledge and when to seek advice from other services
- peer services available to assist laboratory examination, testing and interpretation of forensic samples
- review processes for examination of test findings
- common complex testing techniques and methods:
 - infrared and ultraviolet/visible (UV/Vis) spectrometric techniques, such as inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectroscopy (ICP-MS), X-ray fluorescence (XRF) and neutron activation analysis (NAA)
 - chromatographic techniques, such as gas chromatography mass spectroscopy (GC-MS), ion chromatography (IC) and high-pressure liquid chromatography (HPLC)
- principles and purpose of test methods implemented (why they are used and what they demonstrate)
- 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 with specialised analytical instruments, 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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