



Australian Government

MSL977002 Troubleshoot equipment and/or production processes

Release: 1

MSL977002 Troubleshoot equipment and/or production processes

Modification History

Release 1. Supersedes and is equivalent to MSL977002A Troubleshoot equipment and/or production processes

Application

This unit of competency covers the ability to apply technical, instrumental and equipment knowledge and skills to troubleshoot testing equipment and testing issues related to production processes, identify problems and recommend corrective action.

This unit of competency is applicable to senior technical officers, laboratory supervisors and technical specialists working in all industry sectors. All operations must comply with relevant standards, appropriate procedures and/or workplace requirements. Troubleshooting is the process of using technical knowledge and skills to investigate abnormal performance and assay results. This unit of competency includes troubleshooting testing equipment and testing issues related to production processes. In the case of chromatography, for example, these problems may be related to materials, such as laboratory solvents, procedures or equipment components, such as columns, injectors, pumps and detectors.

While no specific licensing or certification requirements apply to this unit at the time of publication, laboratory operations are governed by relevant legislation, regulations and/or external accreditation requirements. Local requirements should be checked.

Pre-requisite Unit

Nil

Competency Field

Testing

Unit Sector

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 Identify abnormal equipment and/or process | 1.1 | Determine whether testing equipment is operating to manufacturer specifications |
| | 1.2 | Recognise whether equipment outputs are consistent with normal operation |

	performance	1.3	Identify signs of equipment degradation and impending failure
		1.4	Inspect equipment outputs to determine nature of the problem
		1.5	Define nature of substandard performance
2	Identify causes of substandard performance	2.1	Select appropriate technical process for investigation
		2.2	Identify causes using fact-finding processes, including interviews with appropriate personnel
		2.3	Review maintenance records to ensure that system does not need simple maintenance
		2.4	Review calibration records to ensure system is within calibration
		2.5	Verify that the appropriate test procedure, materials and equipment were used
		2.6	Conduct performance tests as appropriate to investigation
		2.7	Analyse equipment and/or testing variables to develop list of possible causes
		2.8	Isolate causes using appropriate elimination techniques
3	Recommend corrective action	3.1	Propose and trial corrective action based on investigation
		3.2	Monitor trial data to ensure outputs are consistent with normal operation
		3.3	Review trial results to confirm validity of corrective action
		3.4	Maintain workplace records as required
		3.5	Submit report summarising investigation and recommendations

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.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Standards, codes, procedures and/or workplace requirements

Standards, codes, procedures and/or workplace requirements include the latest version of one or more of:

- Australian and international standards covering the requirements for the competence of testing and calibration laboratories, laboratory safety, quality and environmental management systems, and measurement management systems
- national work health and safety (WHS) standards and codes of practice, and national measurement regulations and guidelines
- Australian and international standards and guidelines covering specialised analysis, accuracy of measurement methods and results, expression of uncertainty, quantifying uncertainty, Association of Analytical Communities International (AOAC International) Official Methods of Analysis, and Validation of Analytical Procedures
- specific codes, guidelines, procedures and methods, such as National Association of Testing Authorities (NATA) accreditation programs requirements, Australian code of good manufacturing practice for medicinal products (GMP), principles of good laboratory practice (GLP), Food Standards Australia New Zealand (FSANZ) Code, Australian Dangerous Goods Code, gene technology regulations, National Health and Medical Research Council (NHMRC) Guidelines, and Therapeutic Goods Regulations
- workplace documents, such as standard operating procedures (SOPs); quality and equipment manuals; calibration and maintenance schedules; material safety data sheets (MSDS) and safety procedures; material, production and product specifications; production and laboratory schedules; workplace recording and reporting procedures; waste minimisation and safe disposal procedures; cleaning, hygiene and personal hygiene requirements; stock records and inventory
- sampling procedures (labelling, preparation, storage, transport and disposal)

WHS and environmental management requirements

- test procedures (validated and authorised)

WHS and environmental management requirements include:

- complying with WHS and environmental management requirements at all times, which may be imposed through state/territory or federal legislation. These requirements must not be compromised at any time
- applying standard precautions relating to the potentially hazardous nature of samples
- accessing and applying current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health, where relevant

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSL977002A Troubleshoot equipment and/or production processes

Links

Companion Volume implementation guides are found in VETNet -

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

Assessment Requirements for MSL977002 Troubleshoot equipment and/or production processes

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Performance Evidence

Evidence of competence in this unit must satisfy all of the requirements of the elements and performance criteria, and include demonstration of:

- troubleshooting at least two (2) different testing equipment/testing issues related to production processes to identify causes of problems and recommend corrective action
- locating and interpreting relevant information, such as performance data, calibration and maintenance records
- using technical knowledge and skills to investigate abnormal performance and/or assay results
- applying technical, instrumental and equipment knowledge and skills to troubleshoot testing equipment/testing issues
- identifying causes of faulty or substandard performance
- proposing adjustments, rectifications and modifications
- testing the results of adjustments, rectifications and modifications
- maintaining accurate and complete workplace records
- reporting the process and outcomes of investigations with clear recommendations
- following workplace safety procedures.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- relevant regulatory, licensing and testing requirements
- principles and concepts that underpin operation of testing equipment and test methods
- overall characteristics, capabilities and limitations of testing equipment and its components
- functions of key equipment components and sub-systems and effects on outputs and results of modifying variables
- possible effects of matrix and impurities on analytical methods
- effects on outputs and results of varying test procedure and/or modifying test materials or reagents
- troubleshooting procedures and elimination techniques for isolating causes of problems
- mathematical and statistical procedures for evaluating test data
- workplace requirements for problem investigation and reporting
- relevant hazards, work health and safety (WHS) and environment requirements.

Assessment Conditions

- Judgment of competence must be based on holistic assessment of the evidence. Assessment methods must confirm consistency of performance over time, rather than a single assessment event.
- This unit of competency is to be assessed in the workplace or a simulated workplace environment. A simulated workplace environment must reflect realistic operational workplace conditions that cover all aspects of workplace performance, including the environment, task skills, task management skills, contingency management skills and job role environment skills.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept in each case).
- This unit of competency may be assessed with:
 - MSL977001 Contribute to development of products and applications
 - MSL977003 Contribute to validation of test methods.
 - MSL977004 Develop or adapt analyses and procedures
- Holistic assessment methods include:
 - review of reports outlining at least two (2) investigations conducted by the candidate, including the nature and identified causes of substandard performance, test data, trial of corrective actions and final recommendations
 - feedback from supervisors and/or clients about the candidate's ability to troubleshoot testing equipment/issues, identify problems and recommend valid corrective actions
 - review of candidate's responses to simulated equipment failure scenarios
 - oral or written questioning covering testing equipment operation, common testing issues, troubleshooting procedures and problem-solving techniques.
- Access is required to instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit including, but not limited to:
 - a standard laboratory equipped with appropriate equipment, samples, reagents and test methods, laboratory procedures and standard operating procedures (SOPs)
 - performance data, calibration and maintenance records relevant to investigation.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competence and currency.
- Technical competence can be demonstrated through:
 - relevant VET or other qualification/Statement of Attainment AND/OR
 - relevant workplace experience.
- Currency can be demonstrated through:
 - performing the competency being assessed as part of current employment OR

- having consulted with a laboratory about performing the competency being assessed within the last twelve months.

Links

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