Australian Government

Assessment Requirements for MSL975018 Perform complex tests to measure chemical properties of materials

Release: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

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Modification History

Release 1. Supersedes and is equivalent to MSL975018A Perform complex tests to measure chemical properties of materials

Performance Evidence

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

- isolating analytes from complex matrices and performing multi-staged and/or multi-component analysis on them on at least three (3) different occasions
- accurately interpreting client requests, test methods and procedures
- applying detailed knowledge of analytical chemistry to develop an analysis plan for approval by a supervisor
- maintaining close attention to measurement procedures, accuracy and precision during lengthy and complex tests
- preparing samples and standards
- safely setting up, starting up and shutting down equipment using workplace procedures
- checking the calibration and qualification status of equipment
- optimising procedures and equipment to suit sample and test requirements
- making approved adjustments to procedures
- preparing and using calibration charts and standards
- analysing data, recognising atypical or anomalous results and troubleshooting common analytical procedure and equipment problems
- calculating analyte concentrations with appropriate accuracy, precision, units and uncertainty
- recording data and reporting results using workplace procedures
- maintaining security, integrity and traceability of samples and documentation
- following workplace safety procedures.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- principles and concepts underpinning the analysis, including:
  - nature of specific sample matrices
  - effects of interferents with analyte behaviour, such as ionisation, complexation, precipitation, masking and association
  - quantification methods, such as internal standards, standard additions, Gran's Plot and recovery checks
  - chemical and physical treatments to minimise interferences
  - fragile and labile nature of biological sample materials
- sample preparation procedures used for analyses
- special needs for sample treatment or pre-treatment
- function of key components of equipment and effects of modifying instrumental variables on outputs and results
- basic procedure and equipment troubleshooting techniques
- common analytical procedure and equipment problems, including:
  - matrix interference
  - spectral interference
  - problems associated with the physical state of the analyte, such as blockages and viscosity changing flow rates to instruments
- basic equipment maintenance procedures
- calculation steps to give results in appropriate units, precision and uncertainty
- workplace and legal traceability requirements
- 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:
  - MSL925001 Analyse data and report results
- Holistic assessment methods include:
  - review of test data/results obtained by the candidate over time to ensure accuracy and consistency of results
  - inspection of test records and workplace documentation completed by the candidate
  - observation of candidate conducting a range of complex tests to measure chemical properties of materials
  - feedback from clients, peers and supervisors about the candidate's ability to provide valid and reliable results within expected timeframes
  - oral or written questioning of relevant chemical principles, concepts, sample preparation, isolation of analytes, analytical techniques and workplace procedures.
- Access is required to instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
  - a standard laboratory with specialised analytical instruments, laboratory reagents and equipment, standard operating procedures (SOPs) and test methods.
- 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

MSA Training Package Implementation Guides - http://mskills.org.au/training-packages/info/