



Australian Government

Assessment Requirements for MSL925004

Analyse data and report results

Release: 1

Assessment Requirements for MSL925004 Analyse data and report results

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 MSL925001 Analyse data and report results. Foundation skills information added. Range of conditions removed. Assessment requirements amended.

Performance Evidence

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

- calculated scientific quantities of laboratory data, including at least five 4 of the following:
 - percentage and absolute uncertainties in measurements and test results
 - pH, [H⁺], [OH⁻], buffer calculations
 - K_a, pK_a, K_b, pK_b and K_w
 - solubility constants K_s and pK_s
 - radioactivity (half life, dose, activity and exposure)
 - optical properties (absorbance/transmittance, path length, extinction coefficient, concentration (Beers law) and detection limits)
 - electrical properties (conductivity, resistivity and dielectric constants)
 - mechanical properties (stress, strain, elastic moduli, yield strength and hardness)
 - thermal properties (heat capacity, thermal expansion, thermal conductivity and thermal resistance)
 - food content (%) of water, ash, dietary and crude fibre, carbohydrate, protein, fat and specific vitamin
 - quantities associated with quality control monitoring, assessment and reporting
- used and interpreted statistical analysis and significance tests of laboratory data including at least 4 of the following:
 - mean, median, mode, range, variance and standard deviation
 - measures of central tendency and dispersion
 - histograms, frequency plots, stem and leaf plots, boxplots and scatter plots
 - probability and normal probability plots

- Pareto diagrams, Shewhart control charts and CuSum control charts
- regression methods for calibration, linearity checks and comparing analytical methods
- data acceptability tests, such as Q, T and Youden
- t-test, f-test, analysis of variance (ANOVA)
- used and interpreted graphical analysis of laboratory data including at least 3 of the following:
 - preparation and interpretation of linear, semi-log and log-log graphs
 - determination of linear, logarithmic, exponential and power relationships
 - regression lines and interpretation of correlation coefficients
 - preparation of frequency distributions for given data
 - preparation of complex control charts.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- scientific and technical terminology: variables, dispersion, central tendency, process control, process stability, normal distribution, confidence level and replication
- the characteristics of a valid measurement
- relevance/importance of the national measurement legislation and guidelines to laboratory measurement
- sources and estimates of uncertainty in measurements
- workplace procedures for:
 - data traceability
 - verifying data and rectifying mistakes
 - maintaining and filing records, and maintaining security of data
- legal, ethical and work health and safety (WHS) requirements specific to the work task.

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:
 - data sets and records
 - calculator
 - computer and relevant software, including spreadsheets, databases and statistical packages or laboratory information system
 - relevant workplace procedures.

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

Links

MSL Laboratory Operations Companion Volume Implementation Guide is available from VETNet -

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