



Australian Government

MSL924003 Process and interpret data

Release: 1

MSL924003 Process and interpret data

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 MSL924001 Process and interpret data. Changes to performance criteria. Range of conditions removed. Assessment requirements amended.

Application

This unit of competency describes the skills and knowledge to retrieve data, evaluate formulae and perform scientific calculations, present and interpret information in tables and graphs and keep accurate records. The unit requires personnel to solve problems of limited complexity where the information may be less obvious, but not contradictory, and can be determined by direct reasoning.

This unit of competency applies to laboratory assistants, field/laboratory technicians and instrument operators in all industry sectors.

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

Data

Elements and Performance Criteria

Elements describe the essential outcomes.

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

1 **Retrieve and check data**

1.1 Store and retrieve data using appropriate files and/or application software

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
		1.2	Verify the quality of data using workplace procedures
		1.3	Rectify errors in data using workplace procedures
2	Calculate scientific quantities	2.1	Calculate statistical values for given data
		2.2	Calculate scientific quantities using given formulae and data and estimate uncertainties
		2.3	Ensure calculated quantities are consistent with estimations and expectations
		2.4	Report all calculated quantities using the appropriate units and correct number of significant figures
3	Present data	3.1	Present data in clearly labelled tables, charts and graphs
		3.2	Graph data using appropriate scales to span the range of data or display trends
		3.3	Report all data using the appropriate units and number of significant figures
4	Interpret data	4.1	Interpret significant features of tables, charts and graphs, including gradients, intercepts, maximum and minimum values, and limit lines
		4.2	Recognise and report trends in data
5	Keep accurate records	5.1	Transcribe information accurately
		5.2	Verify the accuracy of records following workplace procedures

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 MSL924001 Process and interpret data, Release 1.

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>

Assessment Requirements for MSL924003 Process and interpret data

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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:

- processed and interpreted different data sets
- calculated scientific and statistical quantities with or without a calculator or computer software, including the following items:
 - converting units involving multiples and submultiples
 - scientific notation, significant figures, round off, estimate and approximate
 - transposing and evaluating formulae
 - fractions, decimals, proportions and percentages
 - mean
 - median
 - mode
 - standard deviation
- performed at least 5 of the following calculations:
 - perimeters and angles
 - percentage and absolute uncertainties in measurements and test results
 - areas (m²) and volumes (mL, L, m³) of regular shapes, such as packaging
 - dose (mg), average mass, mass percentage, density, specific gravity, moisture, relative and absolute humidity, viscosity and permeability
 - ratios, such as mass to mass, mass to volume and volume to volume percentages
 - concentration, such as molarity, g/100mL, mg/L, mg/L, ppm, ppb, dilution mL/L
 - average count, colonies per swab surface and cell counts, such as live and dead/total
 - process variables, such as pressure, gauge pressure, velocity and flow rates

- food properties, such as % concentration (dry), friability, bitterness, brix, free amino nitrogen, diastatic power, calorific content and yeast viability, % content of moisture, ash, fat, protein, alcohol, sulphur dioxide and trace metals, such as calcium or zinc
- mechanical properties, such as stress, strain, moduli and force
- presenting accurate results in the required format (significant figures, uncertainty units)
- prepared and presented data in the at least 5 of the following formats:
 - tables
 - graphs
 - line graphs
 - histograms
 - pie charts, bar charts and control charts
 - semi-quantitative observations expressed on a scale: 1 to 4 or + to ++++
- recognised and interpreted significant points, anomalies and trends in data.

Knowledge Evidence

- There must be evidence the candidate has knowledge of:
- concepts of metrology, including:
 - that all measurements are estimates
 - repeatability, precision, accuracy and significant figures
 - sources of error, and uncertainty associated with measurement steps
 - traceability
- the international system of units (SI)
- scientific and technical terminology relevant to job role
- workplace procedures for:
 - coding, entering, storing, retrieving and communicating data
 - 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
 - a calculator
 - spreadsheets, computer software, databases and statistical packages
 - computer and relevant software or laboratory information system
 - relevant workplace procedures.

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

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