



**Australian Government**

# **MSS024004 Process and present environmental data**

**Release: 1**

# MSS024004 Process and present environmental data

## Modification History

Release 1. Supersedes and is equivalent to MSS024004A Process and present environmental data

## Application

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

This unit of competency is applicable to environmental technicians working in all industry sectors.

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

## Pre-requisite Unit

Nil

## Competency Field

Data

## Unit Sector

Environmental

## Elements and Performance Criteria

Elements describe the essential outcomes.

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

- |   |   |     |  |
|---|---|-----|--|
| 1 | <b>Retrieve and check environmental</b> | 1.1 | Store and retrieve data using appropriate files and/or application software. |
|   |   | 1.2 | Verify the quality of data using workplace procedures.                       |

	<b>data</b>	1.3	Rectify errors in data using workplace procedures.
2	<b>Calculate scientific quantities</b>	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	<b>Present data</b>	3.1	Present data in clearly labelled tables, charts and/or simple maps.
		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	<b>Interpret data variations and trends</b>	4.1	Compare data with reference values or expected ranges.
		4.2	Recognise and report significant variations and trends in data.
		4.3	Interpret significant features of graphs, such as gradients, intercepts, maximum and minimum values, and limit lines.
5	<b>Keep accurate records and maintain confidentiality</b>	5.1	Transcribe information accurately.
		5.2	Verify the accuracy of records following workplace procedures.
		5.3	File and store workplace records in accordance with workplace procedures.
		5.4	File all reference documents logically and keep them up-to-date and secured.

## 5.5 Observe workplace confidentiality standards.

### **Foundation Skills**

This section describes those required skills (language, literacy and numeracy) 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, and/or workplace requirements include the latest version of one or more of:**

- Australian and international standards covering: environmental management such as AS/NZS ISO 14000 Basic Set; 2007 Environmental Management Basic Set; ISO 5725 Accuracy (trueness and precision) of measurement methods and results, and ISO/IEC Guide covering uncertainty in measurement
- registration/licensing and/or accreditation requirements
- sampling/testing methods, procedures, guidelines provided by workplace or regulator
- validation of equipment and associated software; validation of spreadsheets developed in-house for routine calculations where applicable
- workplace documents, such as standard operating procedures (SOPs), work schedules, quality manual, recording and reporting procedures, equipment manuals, supplier catalogues, handbooks; safety data sheets (SDS) and safety procedures; waste minimisation, containment, processing and safe disposal procedures.

**Concepts of metrology include one or more of:**

- all measurements are estimates
- repeated measurements belong to a sample of the measured parameter
- repeatability, precision, accuracy and significant figures
- sources of error and uncertainty
- traceability.

**Environmental data include one or more of:**

- records, such as:
  - worksheets and spreadsheets
  - databases linked to information management systems
- results, such as:
  - observations
  - field tests and measurements
  - population surveys (type, species, age, sex and weight)
  - vegetation surveys (type, species, height, density and canopy)
  - dilution of working solutions and gases (odours)
  - laboratory analyses

- quality assurance and control assessments
- data presented in forms, such as:
  - graphs, tables, histograms, pie charts, bar charts
  - semi-quantitative observations and be expressed on a scale (e.g. 1 to 4 or + to +++)
  - photographs.

**Calculations include one or more of:**

- calculations performed with or without a calculator
- calculations performed using computer software, spreadsheets, databases and statistical packages

**Calculations of scientific quantities include one or more of:**

- converting units involving multiples and submultiples
- significant figures, rounding off, estimating and approximating
- transposing and evaluating formulae
- fractions, decimals, proportions and percentages
- percentage and absolute uncertainties in measurements and test results
- statistical values of data, such as mean, median, mode and standard deviation
- perimeters and angles, areas (m<sup>2</sup>) and volumes (mL, L, m<sup>3</sup>) of regular shapes
- sampling times
- 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
- variables, such as pressure, gauge pressure, velocity and flow rates
- biological oxygen demand (BOD), chemical oxygen demand (COD) and total organic carbons (TOC)
- % content of moisture, sulphur dioxide and trace metals, such as calcium or zinc.

**Records include one or more of:**

- purchase orders for equipment and materials
- equipment service records
- safety procedures

- history of calibration and test results.

**Work health and safety (WHS) and environmental management requirements include:**

- compliance with relevant federal/state/territory WHS legislation at all times
- assuming that samples are potentially hazardous and applying standard precautions
- accessing and applying current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and state/territory Departments of Health, where relevant.

## Unit Mapping Information

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## Links

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