



Australian Government

MSS025019 Report environmental data

Release: 1

MSS025019 Report environmental data

Modification History

Release 1. Updated unit code. Changes to elements and performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Application

This unit describes the skills and knowledge to perform scientific calculations, process and interrogate environmental data sets, analyse trends and uncertainty in data, and report results within the required timeframe. The unit requires personnel to solve problems where alternatives are not obvious and where investigations and trials may be required and the implications of various solutions considered.

This unit applies to environmental technicians working in all industry sectors.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

MSS024016 Process and present environmental data

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 Perform scientific calculations	
	1.1 Ensure raw data are consistent with expectations and reasonable ranges
	1.2 Calculate scientific quantities involving algebraic, power, exponential and logarithmic functions
	1.3 Ensure calculated quantities are consistent with estimations

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| | | 1.4 | Present results using the appropriate units, uncertainties and number of significant figures |
| 2 | Determine variation or uncertainty in data distributions | 2.1 | Organise raw data into appropriate frequency distributions |
| | | 2.2 | Calculate means, medians, modes, ranges and standard deviations for ungrouped and grouped data |
| | | 2.3 | Interpret frequency distributions to determine the characteristics of the sample or population |
| | | 2.4 | Calculate standard deviations and confidence limits for means and replicates |
| | | 2.5 | Estimate the sampling error or uncertainty in data using statistical analysis |
| | | 2.6 | Determine data acceptability using statistical tests and workplace procedures |
| 3 | Read and interpret data and related statistics | 3.1 | Recognise significant trends in data |
| | | 3.2 | Use standard statistical methods to test for an association or correlation between variables |
| | | 3.3 | Use standard statistical methods to test hypotheses involving the same variable between samples, samples with more than one variable and for paired samples |
| | | 3.4 | Verify data interpretation with supervisor |
| 4 | Check for aberrant data sets | 4.1 | Identify data that cannot be reconciled with sample, data set and documentation, monitoring procedures and expected outcomes |
| | | 4.2 | Determine actions in consultation with supervisor |
| 5 | Report data and analysis | 5.1 | Use charts, tables and graphs to present summarised data and analysis results in the required format |
| | | 5.2 | Verify that entry of data and results are correct |

- 5.3 Clearly identify summary information and any significant trends and problems with data
- 5.4 Write reports in a format and style consistent with their intended use and workplace guidelines
- 5.5 Communicate results within the specified time and in accordance with workplace confidentiality and security guidelines

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

Release 1. Supersedes and is equivalent to MSS025003 Report environmental data.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998>

Assessment Requirements for MSS025019 Report environmental 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:

- analysed environmental data and prepared and communicated at least 1 report, including:
 - storing, retrieving and manipulating environmental data in accordance with workplace procedures and traceability requirements
 - performing calculations with or without a calculator or computer software and presenting accurate results in the required format and timeframe
 - calculating at least 4 scientific quantities relevant to their work
 - using appropriate graphical or statistical methods to analyse given data sets
 - preparing frequency distributions for given data, and calculating and interpreting measures of central tendency and dispersion
 - analysing data to determine relationships between variables and samples.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- characteristics of a valid measurement and valid sample
- sources and estimates of uncertainty in measurements
- role of statistics in the interpretation and analysis of environmental data
- environmental data terminology, including variables, dispersion, central tendency, normal distribution, confidence level and replication, inference, causation, association, correlation and hypothesis
- calculations involving evaluation of formulae containing algebraic, power, exponential and logarithmic functions, measures of central tendency, sum of squares, variance and standard deviation
- preparation and interpretation on linear and non-linear graphs, and frequency distribution plots
- determination of regression line equations and correlation coefficients
- statistical analysis and significance tests, including t-test, analysis of variance (ANOVA), chi squared test and data acceptability tests, including Q, T and Youden
- procedures for ensuring data traceability
- procedures for verifying data and rectifying mistakes
- procedures for maintaining and filing records and maintaining security of data.

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 facilities, equipment and resources, including:
 - calculator, computer and relevant software or laboratory information system
 - environmental data sets and records
 - documentation, including user manuals; workplace procedures for recording, processing, storing and reporting environmental data; and test or survey methods.

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

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