



Australian Government

MSS025032 Report environmental data

Release: 1

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Modification History

Release 1. Unit code changed. Application changed. Performance Criteria changed. Foundation Skills populated. Assessment Requirements changed. Supersedes and is equivalent to MSS025019 Report environmental data.

Application

This unit describes the skills and knowledge required to process, interrogate and interpret environmental data and report results.

This unit applies to environmental technicians and similar roles who are required to perform scientific calculations, analyse trends and uncertainty in data, identify aberrant data, and use standard statistical methods to interpret data and present results.

The individual will solve problems where alternatives are not obvious and where investigations and trials may be required, and the implications of various solutions considered. A calculator or computer and software will typically be used but is not required.

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

MSS024028 Process and present environmental data

Competency Field

Environmental monitoring and technology

Elements and Performance Criteria

Elements	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 is consistent with expectations and reasonable ranges 1.2 Calculate scientific quantities involving algebraic, power, exponential and logarithmic functions 1.3 Check calculated values are consistent with expectations and recalculate to correct any errors 1.4 Present results using appropriate units, uncertainties and number of

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	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 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 in the required format to present summarised data and analysis results 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 but not explicit in the performance criteria.

- Reading skills to interpret complex workplace documents
- Writing skills to summarise and report results
- Oral communication skills to communicate with supervisor and stakeholders
- Numeracy skills to perform scientific calculations, use standard statistical methods and analyse trends and uncertainty in data.

Other foundation skills essential to performance are explicit in the performance criteria of this unit.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS025019 Report environmental data.

Links

Companion Volume Implementation Guides are found in VETNet -

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

Assessment Requirements for MSS025032 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 demonstrated the ability to:

- manipulate, interpret and report on at least 2 data sets incorporating calculation of at least 4 scientific quantities.

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 suitable facilities, equipment and resources, including:

- environmental data sets and records
- workplace procedures for recording, processing, storing and reporting environmental data
- test or survey methods
- modelling of industry operating conditions.

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

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