



Australian Government

Department of Education, Employment and Workplace Relations

NWP607 Manage drinking water quality information

Release: 1

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Modification History

NWP607 Release 1: Primary release.

Unit Descriptor

This unit of competency sets out the knowledge and skills required to manage drinking water quality information. It provides an understanding of key biological and chemical processes required to design a monitoring program, formulate and manage a water quality database, and assess water quality data.

Application of the Unit

This unit applies to technical personnel who support water utility managers in managing the information about the quality of the water supply.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the tasks you need to be able to perform, to demonstrate that you can achieve the element. Where <i>bold italicised</i> text is used, further information is detailed in the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Design a water quality monitoring program	1.1 Research water quality monitoring principles. 1.2 Document objectives in justifying a monitoring program. 1.3 Outline and explain the key features (what, where, when) of a monitoring program. 1.4 Construct a population-based monitoring program.
2 Design a water quality database	2.1 Utilise key generic identifiers required in a water quality database. 2.2 Develop abbreviated site codes. 2.3 Construct a cross-tabs database, using standard computer programs/software . 2.4 Convert data from single-line format to cross-tabs format.
3 Manage a water quality database	3.1 Append data to a data base. 3.2 Retrieve and sort data within a database. 3.3 Write a software query to extract data from a database.
4 Analyse and summarise water quality data	4.1 Transform data to logarithmic values. 4.2 Analyse data to produce statistical summaries. 4.3 Assess data against water quality targets/criteria. 4.4 Produce graphical representations.
5 Take action on non-compliant water quality data	5.1 Recognise and describe problems in water quality data. 5.2 Consult with supervisory professional staff about appropriate corrective action. 5.3 Follow instructions to address water quality issues .

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills:

- use of standard analytical tools and formulae
- interpretation and application of technical documentation to the collection, analysis and reporting of water quality data
- interpretation and application of documentation to the design of monitoring programs
- use of data recording and reporting systems
- use of standard computer programs to manipulate and graph data
- calculate water quality data percentage compliance against targets/criteria
- access Australian Bureau of Statistics web site and extract relevant population data

Required knowledge:

- key concepts of water biology and chemistry
- availability of computer based statistical tools
- water quality monitoring theory
- significance and relevance of various water quality test parameters
- units of measurement of water quality parameters
- proper names and abbreviated symbols for water quality test parameters
- purpose of having (water quality) data bases
- how to deal with data that are below test detection levels
- meaning of "geometric mean", "mean", "percentage", "percentile" and how to calculate these using software

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The candidate should demonstrate the ability to use water quality management knowledge to:

- apply the principles of water quality science to monitoring program design
- apply the principles of water science to water quality data analysis and interpretation
- design and operate a water quality data base
- take action if there are water quality issues

Context of and specific resources for assessment

Access to the workplace and resources including:

- documentation that should normally be available in a water industry organisation
- workplace specific equipment and technology
- supervision and experienced team members to provide observations, feedback and third party reports
- enterprise operating procedures and work allocation
- relevant codes, standards, and government regulations

Where applicable, physical resources should include equipment modified for people with disabilities.

Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

Validity and sufficiency of evidence require that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice
- a decision of competence should only be made when the assessor has complete confidence in the person's competence over time and in various contexts
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency

demonstrated over a period of time

- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the skill levels of the operator, any cultural issues that may affect responses to the questions, and reflecting the requirements of the competency and the work being performed.

Method of assessment

The following methods are suggested:

- assessment in the workplace or in a simulated workplace and under the normal range of workplace conditions
- techniques for gathering evidence of competency may include a combination of:
 - observation of performance
 - written and/or oral questioning to assess knowledge and understanding
 - exams
 - completion of workplace documents and reports produced as part of routine work activities
 - third party reports from experienced practitioners, supervisors and specialists

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Key generic identifiers
may include:

- date
- location
- time
- pH, etc

Standard computer programs/software
may include:

- database software such as MS Access
- spreadsheet software such as MS Excel
- corporate software

Addressing water quality issues
may include:

- re-testing water
- organising with lab to re-test
- following relevant organisational procedure for dealing with failed water quality results
- informing regulatory authority e.g. Health Dept.

Unit Sector(s)

Not applicable.

Competency Field

Water Quality Science/Engineering.