



Australian Government

Department of Education, Employment and Workplace Relations

NWP317B Control water quality in distribution systems

Revision Number: 2

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Modification History

NWP317B Release 2: Layout adjusted. No changes to content.

NWP317B Release 1: Primary release.

Unit Descriptor

This unit of competency describes the outcomes required to monitor, identify and resolve water quality problems in water distribution systems. The ability to identify and investigate operational problems, collect samples and analyse technical information, communicate effectively with stakeholders and to interpret and apply incident management procedures are essential to performance.

Application of the Unit

This unit supports the attainment of skills and knowledge required for field and operational staff with a specific responsibility for monitoring water quality and responding to issues affecting water quality in distribution systems.

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 required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Identify and locate water quality problems.	1.1 Conduct <i>monitoring of water quality</i> according to <i>organisational and statutory requirements</i>. 1.2 Investigate <i>water quality problems</i> and identify the cause according to organisational requirements. 1.3 Collect, analyse and report <i>system data</i> according to organisational requirements. 1.4 Collect, label and record samples according to organisational requirements. 1.5 Correctly select, fit and use required safety equipment, including personal protective equipment.
2 Respond to water quality problems.	2.1 Analyse incidents and apply <i>incident management procedures</i> to resolve water quality problems. 2.2 Notify <i>stakeholders</i> of policies, procedures and plans. 2.3 Monitor the recovery of the system and measure recovery according to organisational requirements. 2.4 Investigate and review results and take action according to organisational requirements.
3 Complete documentation.	3.1 Report process faults according to organisational requirements. 3.2 Compile reports from system data according to organisational requirements.

Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- identify and correct operational problems
- identify and investigate water quality problems
- access, interpret and apply relevant organizational and legislative requirements
- identifies environmental policies, plans and procedures
- undertake sampling and testing procedures
- produce reports, logs, etc.
- use safety equipment and personal protective equipment
- investigate type of contamination
- interpret plans, service diagrams, topographic plans, charts and specifications
- interpret policies, standard operating procedures
- communicate with employees and customers
- manage system operations and processes
- use communication systems
- give and receive instructions
- monitor inflows
- identify control system faults

Required knowledge:

- relevant legislative requirements and responsibilities
- established environmental management procedures
- control procedures for environmental risks and incidents
- environmental impact assessment
- primary agencies involved in drinking water quality management
- water quality standards and issues
- causes of water quality deterioration
- system hydraulics
- incident management processes
- system layout
- system processes
- systems operation
- isolation procedures
- sampling and testing procedures
- water quality specifications
- environmental aspects of water systems and infrastructure
- safety procedures
- lock out procedures for mechanical and electrical installations
- policies, standard operating procedures and legislation
- relevant utilities and service bodies

- communication systems
- environment, landscape and ground structure of work area
- risk management principles
- risk factors and potential hazards involved in water systems
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of infrastructure
- pipes and fittings
- pumping and valving systems
- control systems

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the 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:

- perform each task outlined in the elements consistently and in a representative range of contexts
- meet the performance criteria associated with each element by employing the techniques, procedures, information and resources available in the workplace from those listed in the range statement
- demonstrate an understanding of the underpinning knowledge and the application of skills as described under knowledge and skills

The candidate should demonstrate the ability to:

- monitor characteristics of water quality
- investigate water quality problems
- collect samples
- collect and record water quality data
- analyse and resolve water quality incidents
- inform stakeholders regarding water quality procedures and incident management plans
- complete incident reports and other relevant documentation

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
- relevant codes, standards, and government regulations

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

Access must be provided to appropriate learning and/or assessment support when required.

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 requires 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 only taken at the point 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.

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. Add any 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.

Monitoring may require:

- visual and electronic inspection
- the implementation of incident management plans and reporting procedures
- the implementation of by-laws, organisational policies, standard operating procedures and statutory requirements

Organisational and statutory requirements may include:

- Australian Drinking Water Guidelines
- National Water Quality Management Strategy
- World Health Organisation guidelines
- local authority by-laws
- organisational policies and standard operating procedures
- environment protection
- equal employment opportunity
- occupational health and safety, including the use of personal protective equipment
- plumbing and drainage standards
- Water Acts
- electrical and mechanical procedures
- hazardous substances and dangerous goods

Water quality includes:

- parameters and standards as set by:
 - the World Health Organisation
 - the National Health and Medical Research Council (NHMRC)
 - Australian Drinking Water Guidelines

Water quality problems may include:

- loss of disinfection
- E. coli
- cross contamination
- levels of heavy metals, such as manganese and iron
- turbidity (nephelometric turbidity units -NTU)
- colour (Hazen units - HU)
- odour and presence of trihalomethanes (THMs)

System data may include:

- sampling and testing records
- infrastructure failures
- customer complaints

Investigation may require:

- the identification of possible contamination in areas including:

- catchment areas
 - bulkwater assets
 - water transfer assets
 - water distribution assets
 - sampling procedures
 - interaction and communication with other employees, other authorities and the general public
- Incident management procedures*** may include:
- categorisation of the incident
 - implementation of the incident management control plan
 - customer notification
 - notification to relevant state or territory government departments
- Stakeholders*** may include:
- consumers
 - employee groups
 - community groups
 - government departments

Unit Sector(s)

Not applicable.

Competency field

Collection and distribution.