



Australian Government

Department of Education, Employment and Workplace Relations

NWP346B Monitor, operate and control wastewater treatment processes

Revision Number: 1

NWP346B Monitor, operate and control wastewater treatment processes

Modification History

Not applicable.

Unit Descriptor

Unit descriptor This unit of competency describes the outcomes required to perform basic monitoring, operation, control and measurement of wastewater treatment plant and report on system performance and process quality control.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge required for operational staff that may be required to perform monitoring, operation and control of wastewater treatment plant, as an additional and occasional part of their normal job role.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability Skills This unit of competency 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 required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Monitor treatment plant performance.	<p>1.1 Carry out <i>routine plant inspections</i> according to the type of plant and <i>organisational and statutory requirements</i>.</p> <p>1.2 Select and check <i>equipment</i> and correctly fit and use personal protective equipment.</p> <p>1.3 Collect process samples and conduct standard <i>tests</i>.</p> <p>1.4 Collect process data and report according to organisational and plant requirements.</p>
2 Prepare and apply chemical dosing.	<p>2.1 Use, handle and store <i>chemicals</i> according to organisational and statutory requirements.</p> <p>2.2 Prepare chemical dosing according to plant processes and organisational and statutory requirements.</p> <p>2.3 Maintain information related to chemical supply and usage according to statutory requirements.</p>
3 Operate and control processes.	<p>3.1 Monitor <i>processes</i> to maintain the parameters of operation.</p> <p>3.2 Identify and report process faults and the operational condition of plant according to organisational and statutory requirements.</p> <p>3.3 Carry out basic <i>system adjustments</i> to enhance system performance according to organisational and statutory requirements.</p>
4 Compile process records.	<p>4.1 Compile <i>records</i> from plant and system data to meet organisational procedures and statutory requirements.</p> <p>4.2 Report observations outside defined parameters for further action.</p>

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- solve operational problems
- perform process calculations
- produce reports and logs
- use safety equipment and personal protective equipment
- interpret plans, charts and instructions
- interpret policies, procedures and standards
- communicate with employees and various customers
- work effectively as part of a team
- use communication equipment
- give and receive instructions
- prepare and apply chemical dosing
- operate computerised equipment
- identify control system faults
- sample and test products.

Required knowledge:

- system layout
- lock out procedures for mechanical and electrical installations
- policies, procedures and legislation
- relevant utilities and service bodies
- communication systems
- hazardous materials handling
- environment, landscape and ground structure of work area
- risk factors and potential hazards related to wastewater treatment
- chemical dosing processes
- system calculations
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of site or plant
- pumping and valving systems
- control systems' policies and procedures for storing and handling dangerous goods and chemicals
- interpretation and use of material safety data sheets
- chemical and biological principles that form the basis of wastewater treatment.

Evidence Guide

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 demonstrate the ability to monitor, operate and control routine aspects of wastewater treatment processes, including:

- conducting routine plant inspections
- taking samples and performing basic tests
- preparing and applying chemical dosing according to instructions
- identifying and reporting system faults
- making allowed system adjustments according to instructions
- completing required 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 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

EVIDENCE GUIDE

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

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.

Routine plant inspections may include:

- interaction and communication with other employees, other authorities and the general public
- visual observation
- identification of corrosion damage
- implementation of reporting procedures that may also include procedures for the implementation of by-laws, organisational policies and statutory requirements.

Organisational and statutory requirements may include:

- by-laws and organisational policies
- standard operating procedures
- environment protection
- occupational health and safety
- chemicals
- dangerous goods
- lifts and cranes
- Environment Protection Authority regulations
- licensing agreements
- electrical standards.

Equipment used may include:

- electronic monitoring and metering systems
- manual chart recording systems
- basic hand tools
- sampling and laboratory testing equipment
- computerised equipment
- on- and off-road vehicles
- communication equipment
- personal protective equipment.

Tests may include:

- settling tests
- microscopic observation
- pH
- temperature
- dissolved oxygen
- chlorine residuals
- ammonia, nitrate, reactive phosphorus and alkalinity determinations.

RANGE STATEMENT

Chemicals may include:

- chlorine gas
- sodium hypochlorite
- calcium hypochlorite
- carbon dioxide
- alum
- powder activated carbon
- polymers
- lime.

Processes may include:

- pre-treatment, for example:
- screening
- shredding
- grit removal
- odour removal
- primary treatment, for example:
- primary sedimentation
- secondary treatment, for example:
- trickling filters
- rotating biological contactors
- activated sludge
- lagoon system
- chemical precipitation
- solids handling, for example:
- aerobic or anaerobic digesters
- sludge disposal
- disinfection, for example:
- maturation ponds
- chlorination
- ultraviolet irradiation
- ozonation
- advanced treatment, for example:
- chemical nitrogen removal
- biological nitrogen removal
- biological phosphorus removal
- chemical phosphorous removal
- micro filtration.

System adjustments may include:

- pH correction
- dissolved oxygen levels
- additional carbon source
- variations of run times of equipment.

RANGE STATEMENT

Records may include:

- plant performance data
- chemical usage.

Unit Sector(s)

Not applicable.

Competency field

Competency field Treatment