



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **NWP350B Monitor, operate and control trickling filter processes**

**Revision Number: 2**

## **NWP350B Monitor, operate and control trickling filter processes**

### **Modification History**

NWP350B Release 2: Layout adjusted. No changes to content.

NWP350B Release 1: Primary release.

### **Unit Descriptor**

This unit of competency describes the outcomes required to monitor, operate and control fixed film aerobic bioreactor processes, such as trickling filters and rotating biological contactors. This unit of competency also describes the outcomes required to measure and report on system performance and process quality control.

### **Application of the Unit**

This unit supports the attainment of skills and knowledge required for operational staff with a specific responsibility for ensuring that fixed film aerobic bioreactor processes, such as trickling filters and rotating biological contactors comply with organisational and statutory requirements.

### **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
<b>1 Monitor fixed film aerobic bioreactor process performance.</b>	<p>1.1 Monitor test results and <b><i>processes</i></b> according to <b><i>organisational and statutory requirements</i></b></p> <p>1.2 Identify and report faults and the operational condition of the process according to organisational procedures and statutory requirements.</p>
<b>2 Operate and control fixed film aerobic bioreactor processes.</b>	<p>2.1 Select and check <b><i>equipment</i></b> and correctly fit and use personal protective equipment.</p> <p>2.2 Carry out <b><i>routine plant inspections</i></b> according to the type of plant and organisational and statutory requirements.</p> <p>2.3 Collect process samples and conduct standard <b><i>tests</i></b>.</p> <p>2.4 Carry out <b><i>system adjustments</i></b> and <b><i>process calculations</i></b> to enhance system performance according to organisational and statutory requirements.</p> <p>2.5 Collect, interpret and record process data according to organisational and plant requirements.</p>
<b>3 Compile fixed film aerobic bioreactor process records.</b>	<p>3.1 Compile <b><i>reports</i></b> from plant and system data to meet organisational procedures and statutory requirements.</p> <p>3.2 Report observations outside defined parameters for further action.</p>

## Required Skills and Knowledge

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

### Required skills:

- identify and correct operational and control system problems
- take samples and perform tests
- produce logs and reports
- determine chemical dosing requirements
- interpret plans, charts and instructions
- interpret policies, procedures and standards
- give and receive instructions
- operate control and communication systems
- use safety and personal protective equipment
- perform relevant process calculations
- use safety and personal protective equipment
- communicate with employees and customers
- work effectively as part of a team
- operate computerised equipment

### Required knowledge:

- process layout
- features and components of fixed film aerobic bioreactor systems
- theory of process operation and monitoring
- chemicals used for pH control, odour control, nutrients
- flow measurement
- risk factors and potential hazards related to fixed film aerobic bioreactor systems
- risk control requirements including safety equipment and material safety data sheets
- lockout procedures for mechanical and electrical installations and hydraulic isolation
- equipment operation, capacity and limitations
- operation of pumping and valving systems
- control and communications systems
- policies, procedures and relevant legislation
- relevant utilities and service bodies
- process calculation
- hazardous materials handling
- interpretation of material safety data sheets
- chemical and biological principles that form the basis of fixed film aerobic wastewater treatment
- types of fixed film processes
- recirculation principles
- operational problems



## 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 fixed film processes including:

- monitoring test results
- identifying and reporting faults
- conducting routine plant inspections
- taking samples and performing basic tests
- making basic process adjustments according to instructions
- collecting data and 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 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.

- Processes*** may include:
- fixed film aerobic treatment processes, such as:
    - trickling filters
    - rotating biological contactors
- Organisational and statutory requirements*** may include:
- by-laws and organisational policies
  - standard operating procedures
  - Australian and New Zealand Environment and Conservation Council (ANZECC) guidelines
  - environment protection
  - occupational health and safety, including the correct use of personal protective equipment
  - chemicals
  - dangerous goods
  - lifts and cranes
  - Environment Protection Authority regulations
  - licensing agreements
  - electrical standards
- Equipment*** may include:
- electronic monitoring and metering systems
  - chart recording systems
  - basic hand tools
  - sampling and laboratory testing equipment
  - computerised equipment
  - communication equipment
  - personal protective equipment
- 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
- Tests*** may include:
- settling tests
  - microscopic observation
  - pH
  - dissolved oxygen
  - nutrient analyses, such as:



- System adjustments* may include:
- nitrogen
  - phosphorus
- Process calculations* may include:
- temperature
  - pH correction
  - dissolved oxygen levels
  - recirculation rates
- Reports* may include:
- hydraulic and organic loading rates
  - recirculation ratios
  - plant performance data
  - chemical usage

## **Unit Sector(s)**

Not applicable.

## **Competency field**

Treatment.