



Australian Government

Department of Education, Employment and Workplace Relations

NWP276A Monitor, operate and report fluoridation processes

Revision Number: 2

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Modification History

NWP276A Release 2: Layout adjusted. No changes to content.

NWP276A Release 1: Primary release.

Unit Descriptor

This unit of competency describes the outcomes required to monitor and operate fluoridation processes and to report on water quality control.

Application of the Unit

This unit is a skill set required by water operators responsible for fluoridation processes in water treatment. It may be a requirement for compliance with state and territory legislation and government water quality guidelines.

This unit of competency is a skills set for operators responsible for fluoridation processes in water treatment.

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 performance needed to demonstrate achievement of 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 Plan and prepare for work.	<p>1.1 Determine work requirements according to <i>organisational requirements</i> and health and safety requirements.</p> <p>1.2 Select and check <i>equipment and tools</i> required to meet safety requirements of task and site.</p> <p>1.3 Select, fit and use <i>personal protective equipment</i>.</p>
2 Monitor process performance.	<p>2.1 Monitor <i>fluoridation processes</i> according to agreed schedule and procedures.</p> <p>2.2 Collect process samples and conduct standard <i>tests</i>.</p> <p>2.3 Maintain and monitor relevant OHS requirements.</p> <p>2.4 Collect <i>process data</i>, perform <i>calculations</i> and report according to organisational and fluoridation process requirements.</p>
3 Prepare and apply fluoride dosing.	<p>3.1 Handle, use and store <i>fluoridation chemicals</i> according to organisational requirements.</p> <p>3.2 Apply fluoride dosing and perform calculations according to organisational requirements.</p>
4 Report on fluoridation processes.	<p>4.1 Maintain information related to fluoride supply and usage according to organisational requirements.</p> <p>4.2 Produce information relating to maintenance and operation according to organisational requirements.</p> <p>4.3 Record information and submit according to organisational procedures for continuous improvement and incident management.</p>

Required Skills and Knowledge

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

Required skills

- identify and respond to operational problems
- produce reports and logs
- use safety and personal protective equipment
- follow plans, charts and instructions
- apply policies, regulatory standards and standard operating procedures relevant to fluoridation
- communicate effectively with colleagues to determine work requirements and report information using clear and direct communication appropriate for the audience and context
- work effectively as part of a team
- use organisation's communication equipment
- receive, clarify and confirm work instructions
- perform chemical dosing calculations
- prepare and apply fluoride dosing
- identify and report control system faults
- identify and report hazards
- perform fluoride residual sampling and testing
- use literacy skills to produce reports and logs and interpret a range of workplace documents
- interpret and follow material safety data sheets (MSDS)

Required knowledge:

- properties of fluoridation chemicals
- fluoridation and its relationship to public health
- fluoride sampling and record keeping
- fluoride addition points
- fluoride system layout and security
- lock-out procedures for mechanical and electrical installations
- policies and standard operating procedures for fluoride processes
- organisation's communication systems and procedures
- safe handling and disposal of fluoride compounds
- risk factors and potential hazards associated with fluoridation
- work-related fluoride calculations
- fluoride dosing processes
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of site or plant
- pumping and valving systems
- automatic feed rate control systems

- MSDS

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 report on fluoridation processes by:

- scheduling work
- selecting and using appropriate tools and equipment, including personal protective equipment
- calculating average fluoride concentrations
- collecting process samples and determining fluoride residuals
- collecting and reporting process data
- preparing and applying fluoride dosing safely
- completing log sheets

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 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 and cultural issues that may affect responses to the questions, and will reflect 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. 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.

Organisational requirements may include:

- codes of practice, associated standards and guidance material for the handling and control of fluoride processes
- organisational policies, manuals and induction programs
- occupational health and safety requirements

Equipment and tools may include:

- electronic monitoring and metering systems
- recording systems
- basic hand and power tools
- sampling and laboratory testing equipment
- computerised equipment
- off-road vehicles, such as forklift trucks
- organisation's communication equipment

Personal protective equipment may include:

- that specified in MSDS
- impervious rubber or plastic suits
- elbow-length gloves, apron and boots with long-sleeved shirt and long trousers
- for plants using dry fluoridating agents:
 - full face mask with type 3 respiratory filter or chemical goggles and a half mask with P3 type respiratory filter (AS/NZS 1715 Selection, Use and Maintenance of Respiratory Protective Devices)
- for plants using liquid fluoridising agents:
 - full face shield or splash-proof safety goggles

Fluoridation processes may include:

- solution feed such as:
 - sodium fluoride solution feed
 - sodium fluoride saturator system
- dry chemical feeders, such as sodium fluorosilicate
- acid feed systems

Tests may include:

- fluoride residual analysis
- ion selective electrodes
- spectrophotometry/colorimetry, such as SPADNS method

Process data may include:

- volume of water treated
- quantity of fluoride added to the water
- stock fluoride on hand
- results of fluoride residual analyses

- Calculations*** may include:
- calculated average fluoride concentrations
 - average fluoride dosage or concentration
 - chemical dosing rate, given required fluoride dosage
 - fluoride dosage, given chemical dosing rate
- Fluoridation chemicals*** may include:
- sodium fluoride
 - sodium fluorosilicate
 - fluorosilicic acid

Unit Sector(s)

Not applicable.

Competency field

Treatment.