



Australian Government

NWPTRT009 Operate and control coagulation and flocculation processes

Release: 1

NWPTRT009 Operate and control coagulation and flocculation processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to operate and control coagulation and flocculation processes.

It includes monitoring, measuring and reporting on system performance and quality control. It also includes identifying faults, determining and applying technical adjustments and conducting chemical dosing procedures.

This unit applies to operational staff with a specific responsibility for coagulation and flocculation processes in water and wastewater plants. Those undertaking this unit would work under appropriate supervision, while performing routine tasks, within a familiar context.

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

Pre-requisite Unit

Not applicable.

Competency Field

Treatment

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare for work

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Determine work requirements from job specifications

		and plans
	1.2	Select and check equipment to meet safety requirements of task and worksite
	1.3	Select, fit and use required safety equipment, including personal protective equipment (PPE)
2	Control chemical use	
	2.1	Handle and store chemicals according to workplace procedures
	2.2	Maintain chemical supply and usage records according to workplace procedures
3	Monitor coagulation and flocculation processes	
	3.1	Conduct routine inspections according to workplace procedures
	3.2	Identify and report process faults to relevant personnel
	3.3	Collect process samples according to workplace procedures
4	Operate and control coagulation and flocculation processes	
	4.1	Conduct jar tests and determine optimum chemical dosages
	4.2	Perform process calculations and adjust chemical dosing according to jar test results
	4.3	Collect and test samples to confirm dosage adjustments
5	Complete documentation	
	5.1	Collect, interpret and record process data according to workplace procedures and process requirements
	5.2	Identify data outside of normal operational parameters and report to relevant personnel for further action

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPTRT015 Operate and control coagulation and flocculation processes.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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Assessment Requirements for NWPTRT009 Operate and control coagulation and flocculation processes

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- applying optimised jar test results to the process
- completing required documentation including at least one of the following:
 - process set point changes
 - routine maintenance reports
 - routine plant inspection and safety checks
 - water quality and safety incident reports
 - water quality sampling and test results
- conducting routine plant inspections
- identifying and reporting system faults
- making system adjustments including at least one of the following:
 - coagulant or flocculant dosing
 - pH correction
- preparing and applying chemical dosing
- preparing jar test solutions and solutions strengths
- producing reports
- performing process calculations for at least one of the following:
 - dry and liquid chemical feed rates
 - jar test dosages
 - mixing intensity
 - preparation of dosing solutions
- taking samples, performing a jar test and at least two of the following:
 - alkalinity
 - true colour
 - dosage feed rate review and checks
 - drop tests
 - flocculation growth and size
 - flocculation time
 - mixing energy

- mixing time
- pH
- residual aluminium or iron
- turbidity

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- chemical dosing procedures
- chemical handling and storage procedures
- chemicals including:
 - coagulants
 - flocculants
 - pH correction
- coagulation and flocculation control systems
- effects of weather and conditions on operation of site or plant
- features and components of coagulation and flocculation systems including mixing
- jar testing principles
- plant layout
- principles of coagulation and flocculation processes
- safety data sheets
- relevant legislation, regulations and workplace procedures
- risk factors and controls for potential hazards related to coagulation and flocculation systems

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace

procedures and operation manuals.

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