



Australian Government

Assessment Requirements for NWPTRT049

Assess and improve activated sludge and biological nutrient removal processes

Release: 1

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Modification History

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

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:

- assessing fault reports and investigating the current operational status of activated sludge or biological nutrient removal (BNR) treatment process plant components
- determining data relevance
- identifying a range of wastewater microorganisms, and their general characteristics and types of problems caused
- identifying and responding to risks and hazards
- identifying effluent quality and selecting process control strategies to optimise the growth of beneficial microorganisms
- identifying wastewater characteristics that impact on microorganism growth
- interpreting a range of complex and technical documents including at least one of the following:
 - codes of practice
 - national and industry standards
 - organisational policies
 - regulatory, legislative, licensing and organisational requirements
 - specifications
- investigating and optimising return and wasting rates
- investigating current and potential chemical addition practices
- operating an activated sludge and nutrient removal process
- performing various calculations to provide data for the analysis and development of options and solutions, including at least one of the following:
 - food to microorganism ratio (F:M ratio)
 - sludge age
- planning trials to test the performance of the determined activated sludge or BNR treatment process optimisation options
- preparing reports outlining the optimum treatment for various microorganisms including measures to ensure validity
- reviewing existing activated sludge or BNR treatment process performance with reference to historical data, differences in influent water quality and plant configuration

- selecting measures to optimise the growth of beneficial microorganisms

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 include knowledge of:

- activated sludge and BNR microbiology
- effluent quality and process control strategies
- impact of process variables including:
 - carbon dosing
 - dissolved oxygen
 - mixed liquor suspended solids
 - mixed liquor volatile suspended solids
 - pre-fermentation and readily biodegradable carbon
 - recirculation
 - sludge age
- operational problems caused by wastewater microorganisms
- principles that form the basis of activated sludge treatment processes
- principles that form the basis of BNR-activated sludge treatment processes, including nitrification and de-nitrification, enhanced biological phosphorus removal
- process control strategies
- relevant legislation, industry standards and workplace policies and procedures relating directly to assess activated sludge and BNR microbiology
- risk and hazard management principles
- types of activated sludge and BNR-activated sludge treatment processes including:
 - Anammox and Microbi
 - Nereda
 - Nitrite shunt
- workplace reporting requirements

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.

Links

Companion Volume implementation guides are found in VETNet -

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