



Australian Government

Assessment Requirements for NWPTRT051 Assess and improve treatment for pathogen removal

Release: 1

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Modification History

Release	Comments
1	These Assessment Requirements were released in NWP Water Training Package release 1.0 and meet the Standards for Training Packages.

Performance Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. Candidate must be assessed operating at least one of the processes, treating at least one of the problems, listed in Range of Conditions. If not otherwise specified the candidate must demonstrate evidence of performance of the following on at least one occasion.

- identifying a range of waterborne microorganisms
- analysing general characteristics caused by waterborne microorganisms, including at least one of:
 - pathogenicity
 - virulence
 - resistance to disinfectants
 - opportunistic infection capability
- analysing types of problems caused by waterborne microorganisms, including at least one of:
 - nuisance problems
 - taste and odour
 - filter clogging
 - colour
 - corrosion
 - toxicity problems
 - pathogenic problems
- identifying pathogenic microorganisms and the diseases they cause, including at least one of:
 - viruses
 - bacteria
 - protozoa

- algae
- cyanobacteria
- helminths
- assessing and selecting water or re-use treatment processes for physically removing or deactivating pathogenic microorganisms, including at least one of:
 - filtration
 - slow sand filter
 - granular media filters
 - membrane filters
 - disinfection:
 - chlorination
 - chloramination
 - UV
 - chlorine dioxide
 - ozone
- assessing causes of nuisance and toxicity problems, including at least one of:
 - micro types:
 - diatoms
 - sulphur bacteria
 - cyanobacteria:
 - *Microcystis aeruginosa*
 - *Anabaena circinalis*
 - pathogenic microorganisms:
 - viruses
 - enterovirus
 - hepatitis A
 - hepatitis E
 - rotavirus
 - bacteria:
 - *Campylobacter*
 - *Salmonella*
 - *Escherichia coli*
 - protozoa species:
 - *Giardia*
 - *cryptosporidium*
 - *Nagleria*
 - helminths, including *Ascaris lumbricoides*
- selecting pre- or post-treatment processes for removing the causes of nuisance and toxicity problems, including at least one of:
 - micro-straining

- algicides
- activated carbon
- ozone-biologically activated carbon (BAC)
- preparing reports on the optimum treatment for a range of microorganisms, including measures to ensure validity
- preparing and applying chemical dosing as required
- assessing process performance
- reviewing existing process barrier performance with reference to historical data, differences in raw water quality and plant configuration
- identifying data deficiencies and additional data collection through sampling and testing
- assessing fault reports and investigating current operational status of processes for microorganism removal
- investigating current and potential chemical addition practices
- planning trials to test the performance of the treatment optimisation options for microorganism removal
- preparing recommendation reports
- applying calculations to determine log removal values for physical barriers and contact time for disinfection
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Knowledge Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the depth of knowledge demonstrated must be appropriate to the job context of the candidate.

- types, lifecycle, characteristics of waterborne microorganisms, including:
 - evolutionary development
 - source
 - structure
 - life cycle
 - growth rates and requirements
- nuisance problems caused by waterborne microorganisms
- toxicity and pathogenic problems caused by waterborne microorganisms, including:
 - typhoid
 - cholera
 - ascariasis
 - hepatitis
 - giardiasis
 - cryptosporidiosis
 - gastroenteritis
 - tuberculosis

- relevant legislation, standards and workplace policies and procedures relating directly to the control and treatment of waterborne microorganisms
- principles of water or re-use treatment processes
- log removal value concept for physical barriers
- Ct concept for disinfection
- properties and modes of action of disinfectants
- properties and modes of action for physical barriers
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Assessment Conditions

Competency should be assessed in an actual workplace or in a simulated environment, with access to equipment and infrastructure appropriate to the outcome. Competency should be demonstrated over time to ensure the candidate is assessed across a variety of situations.

Some components of this unit require assessment in a workplace environment therefore the unit is not suitable for fully external or electronic based assessment.

Consideration must be given to holistic assessment for this unit. Refer to advice in the companion volumes.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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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