

Title	Demonstrate microbiological analysis of water quality		
Level	6	Credits	4

Purpose	<p>This unit standard is for people who analyse water samples for quality using microbiological techniques in a laboratory.</p> <p>People credited with this unit standard are able to: describe microorganisms' significance to water quality; and perform test methods for microorganisms in a water sample and analyse the results.</p>
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Classification	Science > Microbiology
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Available grade	Achieved
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Guidance Information

- 1 All work must be carried out in accordance with the quality management system, documented protocol system or Standard Operating Procedures (SOP) acceptable in a commercial or research laboratory.
- 2 Health and Safety practices must conform to Australian/New Zealand Standard AS/NZS 2243 – *Safety in Laboratories* Parts 1, 2, 3, 7 and 10 available at <http://www.standards.co.nz>.
- 3 Legislation applicable to this unit standard includes:
Health Act 1956;
Health and Safety at Work Act 2015;
Hazardous Substances and New Organisms Act 1996.
- 4 Water standards are specified in *Drinking-water Standards for New Zealand 2005 (Revised 2008)* Wellington: Ministry of Health.
<http://www.health.govt.nz/publication/drinking-water-standards-new-zealand-2005-revised-2008>.
- 5 Water sample may be taken from wastewater, storm water, or recreational water sources.
- 6 Glossary
Laboratory procedures refer to documented systems or processes of operation which may be found in a SOP manual, quality management system, or in protocol system documentation. These procedures are external and/or internal laboratory requirements governing laboratory work.

- 7 Recommended for entry: Unit 26117, *Work safely in a science laboratory*; Unit 8038, *Perform viable microbiological counting methods*; and Unit 8040, *Perform aseptic laboratory techniques*.

Outcomes and performance criteria

Outcome 1

Describe microorganisms' significance to water quality.

Performance criteria

- 1.1 Microorganisms are described in terms of their significance to water quality.
- Range faecal coliforms, total coliforms, *Enterococci*, *Escherichia coli*, *Giardia*, *Staphylococcus aureus*, *Pseudomonas*, *Legionella*.
- 1.2 Indicator microorganisms are described in terms of their use in water quality testing.

Outcome 2

Perform tests for microorganisms in a water sample and analyse the results.

Range test methods include – pour plate, membrane filtration plating, most probable number, spread plate;
microorganisms include – faecal coliforms, total coliforms, *Enterococci*, *Escherichia coli*, *Staphylococcus aureus*, *Pseudomonas*;
evidence of each test method and each organism is required. Not all combinations are necessary.

Performance criteria

- 2.1 Test methods for microorganisms are described and explained in terms of laboratory procedure, value, and limitations.
- 2.2 Test methods are performed in accordance with the quality and origin of the water sample.
- 2.3 Numbers of indicator microorganisms in the water sample are determined in accordance with the selected method.
- 2.4 Results for the water sample are analysed and compared with water standard requirements.

Replacement information	This unit standard and unit standard 26111 replaced unit standard 8039.
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This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 May 2010	31 December 2016
Rollover and Revision	2	27 January 2015	31 December 2025
Review	3	27 September 2018	31 December 2025
Review	4	30 November 2023	31 December 2025

Consent and Moderation Requirements (CMR) reference

0113

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.