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| **Title** | **Describe and explain the role and treatment of microorganisms in wastewater** | | |
| **Level** | **5** | **Credits** | **3** |

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| **Purpose** | This unit standard is for people who may or intend to analyse water samples for quality using microbiological techniques in a laboratory.<br><br>People credited with this unit standard are able to describe and explain: the dynamics of microorganism populations in water; the processes necessary to produce potable water; and treatment processes for water. |

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| **Classification** | Science > Microbiology |

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| **Available grade** | Achieved |

**Guidance Information**

1 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.

2 Glossary
*Potable water* is water of sufficiently high quality that it can be consumed or used without risk of immediate or long-term harm.

## Outcomes and performance criteria

### Outcome 1

Describe and explain the dynamics of microorganism populations in water.

**Performance criteria**

1.1 The nutritional requirements of microorganisms found in water are described.

Range chemolithotrophs, chemoorganotrophs, photolithotrophs, photoorganotrophs, filamentous bacteria.

1.2 The influences of environmental factors are explained in terms of microorganism populations in water.

Range temperature, density of water, pH, pressure, salinity, light, redox potential.

**Outcome 2**

Describe and explain the processes necessary to produce potable water.

**Performance criteria**

2.1 Suitable water sources are described in terms water standard requirements.

2.2 The effects of treatment processes in the preparation of potable water are explained in terms of microorganism populations.

Range sedimentation, coagulation, filtration, disinfection, storage, reticulation.

**Outcome 3**

Describe and explain treatment processes for water.

**Performance criteria**

3.1 Primary, secondary, and tertiary water treatment processes are described.

3.2 Water treatment processes are explained in terms of microorganism populations.

Range anaerobic digestors, activated sludge, trickling filters, oxidation ponds, wetlands, constructed wetlands, infiltration, irrigation, disinfection, cesspools, septic tanks.

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| **Replacement information** | **This unit standard and unit standard 26112 replaced unit standard 8039.** |

**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 2025 |
| Rollover | 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 |
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This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.