

Title	Control microbial growth		
Level	5	Credits	3

Purpose	People credited with this unit standard are able to: describe methods used to control microbial growth; apply methods to control microbial growth; describe the mode of action of antibiotics and factors that limit their effectiveness; and measure the effectiveness of an antibiotic.
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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> and <http://infostore.saiglobal.com/store>.
- 3 Legislation applicable to this unit standard includes:
Health and Safety at Work Act 2015;
Hazardous Substances and New Organisms Act 1996.
- 4 National Committee for Clinical Laboratory Standards (NCCLS) specifies the expected inhibitory zone diameters and concentrations.
- 5 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.
- 6 Recommended for entry: Unit 8040, *Perform aseptic laboratory techniques*; and Unit 26117, *Work safely in a science laboratory*.

Outcomes and performance criteria

Outcome 1

Describe methods used to control microbial growth.

Performance criteria

1.1 Physical procedures are described in relation to the control of microbial growth.

Range evidence of three physical procedures is required.

1.2 Chemical agents are described in relation to the control of microbial growth.

Range evidence of three chemical procedures is required.

1.3 The effect of combining factors are outlined in relation to the efficacy of antimicrobial agents.

Range factors include – temperature, time, concentration, pH.

Outcome 2

Apply methods to control microbial growth.

Range methods include – physical, chemical, a combination of physical and chemical.

Performance criteria

2.1 Methods are used to control microbial growth in accordance with laboratory procedures.

Outcome 3

Describe the mode of action of antibiotics and factors that limit their effectiveness.

Performance criteria

3.1 Mode of action of antibiotics is described in relation to cell components or metabolism.

Range cell wall, cell membrane, protein synthesis, nuclear material, anti-metabolites.

3.2 Antibiotic effectiveness is described in terms of the limiting factors.

Outcome 4

Measure the effectiveness of an antibiotic.

Performance criteria

4.1 Disc diffusion test is carried out in accordance with laboratory procedures.

4.2 Diameters of zones of growth inhibition are measured in accordance with laboratory procedures.

- 4.3 Minimum inhibitory concentration test is conducted in accordance with laboratory procedures.
- 4.4 Effectiveness of the antibiotic is determined and is consistent with results in reference data.

Replacement information	This unit standard and unit standard 26109 replaced unit standard 8034.
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Planned review date	31 December 2023
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 May 2010	N/A
Rollover	2	27 January 2015	N/A
Review	3	27 September 2018	N/A

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>.

Comments on this unit standard

Please contact NZQA National Qualifications Services nqs@nzqa.govt.nz if you wish to suggest changes to the content of this unit standard.