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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.

Classification	Science > Microbiology	
Available grade	Achieved	

### **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 <a href="http://www.standards.co.nz">http://www.standards.co.nz</a>.
- 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.

	<b>Replacement information</b> This unit stan standard 803	dard and unit standard 26109 replaced unit 4.
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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 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	
This CMD can be accessed at http://www.accessed.co.t.ac/framework/accessed/index.do		

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