

Australian/New Zealand Standard™

Safety in laboratories

**Part 3: Microbiological aspects and
containment facilities**

AS/NZS 2243.3:2002

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee CH-026, Safety in Laboratories. It was approved on behalf of the Council of Standards Australia on 14 December 2001 and on behalf of the Council of Standards New Zealand on 20 December 2001. It was published on 9 January 2002.

The following are represented on Committee CH-026:

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Department of Labour New Zealand
Ministry of Commerce, New Zealand
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Additional interests participating in the preparation of this Standard:

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Australian/New Zealand Standard™

Safety in laboratories

Part 3: Microbiological aspects and containment facilities

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CH-026, Safety in Laboratories, to supersede AS/NZS 2243.3:1995, *Safety in laboratories*, Part 3: *Microbiology*.

This Standard incorporates Amendment No. 1 (April 2003). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Standard is to promote safety in laboratories and to deal specifically with microbiological aspects of laboratory work. It is intended to be used in conjunction with Parts 1 and 2 in the series, relating to general and chemical safety aspects of laboratory work.

This edition again revises the requirements for laboratories dealing with infectious diseases and the classifications of microorganisms into the four risk groups. It contains descriptions of the four levels of physical containment for microbiology laboratories and laboratories working with genetically modified organisms.

The parts of the series promoting safety in laboratories are as follows:

- Part 1: General
- Part 2: Chemical aspects
- Part 3: Microbiological aspects and containment facilities (this Part)
- Part 4: Ionizing radiations
- Part 5: Non-ionizing radiations
- Part 6: Mechanical aspects
- Part 7: Electrical aspects
- Part 8: Fume cupboards
- Part 9: Recirculating fume cabinets
- Part 10: Storage of chemicals

The term 'shall' is used by Standards Australia and Standards New Zealand to indicate requirements that have to be met for compliance with this Standard. The term 'should' indicates a recommendation.

This Standard is intended to assist in addressing the obligations placed on employers and employees under occupational health and safety legislation to take care of both themselves and others in the workplace.

It should be noted that nothing in this Standard is required by law in any jurisdiction unless the Standard has been specifically incorporated by an Act or regulation in that jurisdiction. The exact manner of incorporation will determine whether the whole document, or specific sections or provisions, are made legal requirements or whether the Standard becomes an Approved Code of Practice. However, it should also be noted that this Standard is recognized in common law as defining current knowledge in microbiological safety practice. The provisions in a Code are not mandatory but give practical guidance on how to comply with the relevant provisions of the Act or regulation. Provided an alternative method also fulfils the requirements of the Act or regulation, it may be used. Users will need to consult the relevant authority to determine if this Standard has been incorporated and the manner of incorporation, if any.

In recognition of the changes made to this Standard during its revision, existing facilities should be assessed for risk and interim control measures should be implemented.

Current facilities and procedures should be updated to conform to this Standard. Compliance improvements should be made within a time frame that takes into consideration the cost of upgrading and the severity of the associated risk.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard and contains requirements that have to be met for compliance with the objectives and intent of this Standard. An 'informative' appendix is only for information and guidance.

CONTENTS

	<i>Page</i>
FOREWORD	7
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	8
1.2 REFERENCED DOCUMENTS	8
1.3 DEFINITIONS	10
SECTION 2 ORGANIZATION AND RESPONSIBILITY	
2.1 RESPONSIBILITY	14
2.2 HEALTH MANAGEMENT	16
2.3 PROVISION OF SERVICES	17
2.4 IMPORTED BIOLOGICAL MATERIALS	17
2.5 INCIDENT/INJURY REPORTING	18
2.6 FIRST AID KIT	18
SECTION 3 DEGREE OF HAZARD FROM MICROORGANISMS	
3.1 GENERAL	19
3.2 CLASSIFICATION OF INFECTIVE MICROORGANISMS BY RISK GROUP	20
3.3 DIAGNOSTIC SPECIMENS	20
3.4 RISK-GROUPING OF MICROORGANISMS BY TYPE	21
3.5 PRIONS	22
SECTION 4 CLASSIFICATION OF LABORATORIES, PRACTICES AND PROCEDURES	
4.1 GENERAL	35
4.2 PHYSICAL CONTAINMENT LEVEL 1 (PC1)	35
4.3 PHYSICAL CONTAINMENT LEVEL 2 (PC2)	35
4.4 PHYSICAL CONTAINMENT LEVEL 3 (PC3)	35
4.5 PHYSICAL CONTAINMENT LEVEL 4 (PC4)	35
4.6 LABORATORIES FOR GENETIC MANIPULATION	36
4.7 PHYSICAL CONTAINMENT LEVEL 1 (PC1) REQUIREMENTS	36
4.8 PHYSICAL CONTAINMENT LEVEL 2 (PC2) REQUIREMENTS	39
4.9 PHYSICAL CONTAINMENT LEVEL 3 (PC3) REQUIREMENTS	42
4.10 PHYSICAL CONTAINMENT LEVEL 4 (PC4) REQUIREMENTS	45
SECTION 5 LABORATORY SPILLS	
5.1 GENERAL	50
5.2 PLANNING	50
5.3 SPILLS INSIDE BIOLOGICAL SAFETY CABINETS	50
5.4 SPILLS OUTSIDE BIOLOGICAL SAFETY CABINETS	51
5.5 CENTRIFUGE SPILLS	53
SECTION 6 GENERAL PRECAUTIONS AND SPECIAL EQUIPMENT	
6.1 GENERAL PRECAUTIONS	54
6.2 PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT (PPCE)	54
6.3 CENTRIFUGES	55
6.4 FREEZE-DRYING AND RECONSTITUTION OF CULTURES	56
6.5 LIQUID NITROGEN	57
6.6 PRESSURE STEAM STERILIZERS	57
6.7 BIOLOGICAL SAFETY CABINETS	60

	<i>Page</i>
6.8 FLEXIBLE FILM ISOLATORS	61
6.9 LAMINAR FLOW CYTOTOXIC DRUG SAFETY CABINETS	61
6.10 HEPA FILTER INSTALLATION AND MAINTENANCE	61
SECTION 7 WORK AREAS	
7.1 WARNING SIGNS	63
7.2 SEGREGATION OF SPECIAL AREAS.....	63
7.3 ANIMAL AREAS.....	63
SECTION 8 LABORATORY CLEANING	
8.1 GENERAL	64
8.2 CLEANING PERSONNEL	64
8.3 BENCHES AND WORK SURFACES.....	64
8.4 WALLS AND SHELVES	64
8.5 FLOOR CLEANING.....	64
SECTION 9 WASTE DISPOSAL	
9.1 COLLECTION.....	66
9.2 TREATMENT AND DISPOSAL OF WASTES	66
SECTION 10 ANIMALS AND ANIMAL CONTAINMENT FACILITIES	
10.1 GENERAL	68
10.2 PERSONAL SAFETY AND LABORATORY ANIMAL ALLERGIES	68
10.3 DISSECTION AND POST-MORTEM EXAMINATIONS.....	68
10.4 STERILIZATION AND WASTE DISPOSAL	68
10.5 REQUIREMENTS FOR CONTAINMENT FACILITIES FOR ANIMALS	69
10.6 DESIGN OF ANIMAL CONTAINMENT FACILITIES	69
10.7 REQUIREMENTS FOR LEVEL PC1 ANIMAL CONTAINMENT FACILITIES ...	70
10.8 REQUIREMENTS FOR LEVEL PC2 ANIMAL CONTAINMENT FACILITIES ...	70
10.9 REQUIREMENTS FOR LEVEL PC3 ANIMAL CONTAINMENT FACILITIES ...	72
SECTION 11 PLANT CONTAINMENT FACILITIES	
11.1 GENERAL	75
11.2 REQUIREMENTS FOR LEVEL PC1 PLANT CONTAINMENT FACILITIES	75
11.3 REQUIREMENTS FOR LEVEL PC2 PLANT CONTAINMENT FACILITIES	75
11.4 REQUIREMENTS FOR LEVEL PC3 PLANT CONTAINMENT FACILITIES	76
11.5 REQUIREMENTS FOR LEVEL PC4 PLANT CONTAINMENT FACILITIES	77
SECTION 12 INVERTEBRATE CONTAINMENT FACILITIES	
12.1 GENERAL	79
12.2 REQUIREMENTS FOR LEVEL PC2 INVERTEBRATE CONTAINMENT FACILITIES	79
12.3 REQUIREMENTS FOR LEVEL PC3 INVERTEBRATE CONTAINMENT FACILITIES	80
12.4 REQUIREMENTS FOR LEVEL PC4 INVERTEBRATE CONTAINMENT FACILITIES	81
SECTION 13 TRANSPORT OF INFECTIOUS AND OTHER BIOLOGICAL MATERIALS	
13.1 GENERAL	83
13.2 TRANSPORT REGULATIONS	83
13.3 IMPORTATION REGULATIONS	83
13.4 CATEGORIES OF BIOLOGICAL MATERIALS	84
13.5 DOCUMENTATION	84

APPENDICES

A	REFERENCES AND RELATED DOCUMENTS.....	87
B	EXAMPLE MICROBIOLOGICAL INCIDENT/ILLNESS REPORT FORM.....	90
C	ADDITIONAL CONTAINMENT REQUIREMENTS FOR POLIOVIRUS	91
D	AGENT SUMMARY FOR <i>COXIELLA BURNETII</i>	92
E	CHEMICAL DISINFECTANTS.....	94
F	BIOLOGICAL HAZARD SIGNS	101
G	RECOMMENDATIONS ON ACCEPTABLE ROOM AIRTIGHTNESS.....	103

FOREWORD

Safety in all laboratories is primarily a management responsibility, but is also an individual responsibility. It is the responsibility of management to provide and maintain protective equipment and containment areas, a policy relating to safe work practices within a laboratory and to promote the training in, and institution of, those practices. It is the responsibility of the laboratory staff to carry out the safe work practices and to use protective equipment to minimize injury or prevent occupational illness, not only to themselves, but also to their colleagues. It is also a responsibility of managers to ensure that consideration is given to hazards to the general environment when dispensing or handling biological material. Staff training must be directed toward making safety an attitude of mind and an integral part of all laboratory procedures, so that a constant, purposeful control of the laboratory environment will result. Accidents such as spillages are an obvious hazard, but the production of aerosols during some routine procedures is a less obvious hazard that can be a serious source of contamination. In addition to the many problems commonly encountered in chemical laboratories, microbiological laboratories can pose the following specific problems:

- (a) Infection of laboratory staff, the general public, animals and plants by dissemination of microorganisms inside and outside the laboratory.
- (b) Cross-contamination of research and diagnostic materials or animals.
- (c) Contamination with adventitious microorganisms.

The basic approach to working with microorganisms is to regard them as potential pathogens and to handle them with standard microbiological techniques. Nevertheless, microorganisms vary markedly in their pathogenicity. This Standard includes the classification of microorganisms into four risk groups and specifies work requirements for the corresponding four physical containment levels.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard
Safety in laboratories

Part 3: Microbiological aspects and containment facilities

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out requirements, responsibilities and general guidelines relating to safety in laboratories where microorganisms and prions are handled. It is intended for laboratories, including animal, plant and invertebrate containment facilities, whether integral or separate to the laboratory, where microbiological work such as research, teaching, diagnosis, quality control and regulatory analysis, e.g. of foodstuffs, water and effluents, pharmaceuticals and cosmetics, is undertaken. It may also provide assistance to other laboratories where specimens which may contain pathogenic microorganisms and prions are handled such as biochemistry and soil laboratories. This Standard should be read in conjunction with AS/NZS 2243.1.

NOTES:

- 1 In this context, microorganism means protozoa, fungi, free-living bacteria, cell-dependent bacteria and viruses.
- 2 This Standard uses the term ‘containment facility’ when referring to ancillary sections of laboratories. Historical terms such as plant houses, glass houses, insectaries and animal houses are no longer used. For example, an animal house is referred to as an animal containment facility.
- 3 This Standard does not provide detailed guidance for genetic manipulation work for which the appropriate body should be consulted. See Clause 4.6.
- 4 Appendix A contains referenced documents that are included in this Standard for additional information and guidance as well as related documents which may be of interest.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1319	Safety signs for the occupational environment
1324	Air filters for use in general ventilation and airconditioning
1324.1	Part 1: Application, performance and construction
1324.2	Part 2: Methods of test
1386	Cleanrooms and clean workstations
1386.5	Part 5: Clean workstations
1410	Sterilizers—Steam—Pre-vacuum
1807	Cleanrooms, workstations, safety cabinets and pharmaceutical isolators— Methods of test
1807.6	Method 6: Determination of integrity of terminally mounted HEPA filter installations