AS/NZS 2982:2010

Australian/New Zealand Standard™

Laboratory design and construction

STANDARDS Australia

STANDARDS NEW ZEALAND PAEREWA AOTEAROA

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee BD-046, Laboratory Design and Construction. It was approved on behalf of the Council of Standards Australia on 24 November 2009 and on behalf of the Council of Standards New Zealand on 22 February 2010.
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The following are represented on Committee BD-046:

Australasian Fire Authorities Council
Australian Chamber of Commerce and Industry
Australian Institute of Architects
Commonwealth Department of Health and Ageing
Commonwealth Scientific and Industrial Research Organization
Engineers Australia
Environmental Science and Research New Zealand
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PREFACE

This Standard was prepared by the members of the Joint Standards Australia/Standards New Zealand Committee BD-046, Laboratory Design and Construction, to supersede AS/NZS 2982.1:1997, *Laboratory design and construction*, Part 1: *General requirements*. This Standard specifies requirements for the design and construction of laboratories based mainly on maximizing the safety of such facilities. Note that this is a single part Standard. The 'Part 1' title reference, included in the superseded standard, has now been dropped.

This Standard supplements the AS/NZS 2243 series, which refers mainly to safe working practices in laboratories. However, the AS/NZS 2243 series also includes some design and construction requirements particularly for specialized components (e.g. fume cupboards) and applications (e.g. physical containment). Reference to both AS/NZS 2982 and the AS/NZS 2243 series is recommended where laboratories are being assessed or planned.

This Standard is designed to help organizations responsible for commissioning and operating laboratories to provide a safe workplace. A laboratory must be designed, constructed, maintained and operated to minimize hazards and reduce risks to personal or public safety to an acceptable level.

While conformity to this Standard will enhance the safety of the workplace, disregard for safe working practices may negate the provisions for safety that are built into a laboratory. It is therefore essential that all personnel, including non-technical staff and visitors, be aware of and follow safe working procedures.

The Committee does not suggest that any of the provisions of this Standard are retrospective. However, users are encouraged to critically reassess their laboratories and adopt and implement those parts of this Standard that are cost effective and practicable and that can improve overall site safety.

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance. Notes are also informative and for information and guidance.

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FOREWORD

The Standard is intended to apply to a wide range of laboratories. It is recognized that certain common design principles apply to laboratories with quite different functions. Separate sections refer to the distinctive needs of biological, radiological, and secondary school laboratories.

A number of different types of hazards may be encountered in laboratories, including—

(a) physical hazards including machinery or equipment in motion, parts under stress, noise, vibration, vacuum or pressurization;

(b) flammable or explosive materials;

(c) ignition sources;

(c) temperature hazards including high temperature materials, cryogenic fluids;

(d) electrical hazards including high voltages, live equipment, static charge;

(e) chemical hazards including asphyxiants, oxidizers, carcinogens, toxins, sensitizing agents, corrosives, irritants and genotoxins;

(f) biological hazards including infectious agents, allergens, irritants, genotoxins, zoonoses;

(g) radiation including both ionizing and non-ionizing; and

(h) ergonomic hazards, including repetitive and fixed postures, slips and trips.

Laboratory design and construction plays a fundamental and critical part in ensuring that laboratories are safe places to work. It is therefore necessary to consider in detail the type of hazards that apply to a particular laboratory and clearly define their nature and significance. This information is essential in order to maximize opportunities to eliminate hazards or to reduce risks to an acceptable level at the laboratory design and construction phase.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for the design and construction of laboratories. Sections 1 to 7 apply to all laboratories. Sections 8, 9 and 10 contain additional requirements applicable to biological, radiological and secondary school laboratories respectively.

NOTES:

1 This Standard is primarily intended for those aspects of laboratory building design and construction related to the safety of the occupants. Various design and construction requirements that are intended to minimize the hazards associated with laboratories are detailed.

2 This Standard should be used in conjunction with the applicable building regulations and other regulations such as those on occupational health and safety, and the relevant referenced Standards.

1.2 DESIGN

Laboratories shall be designed to address the many and varied requirements for safe operation and usage. The design process should include hazard identification, risk assessment and risk management to achieve safe and functional design.

NOTE: For guidance on the design and planning of laboratories, see Appendix A.

1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1216 Class labels for dangerous goods

1319 Safety signs for the occupational environment

1345 Identification of the contents of pipes, conduits and ducts

1482 Electrical equipment for explosive atmospheres—Protection by ventilation—Type of protection v

1668 The use of ventilation and airconditioning in buildings

1668.2 Part 2: Ventilation design for indoor air contaminant control

1735 Lifts, escalators and moving walks (series)

1894 The storage and handling of non-flammable cryogenic and refrigerated liquids

1940 The storage and handling of flammable and combustible liquids

2243 Safety in laboratories

2243.4 Part 4: Ionizing radiations

2243.6 Part 6: Mechanical aspects

2243.7 Part 7: Electrical aspects