AS 2243.2:2021

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Safety in laboratories

Part 2: Chemical aspects and storage

AS 2243.2:2021

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The following are represented on Committee CH-026:

Association of Biosafety for Australia and New Zealand
Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Institute of Health and Safety
Australian Institute of Occupational Hygienists
Bureau of Steel Manufacturers of Australia
CSIRO
Institution of Chemical Engineers
National Measurement Institute
RMIT University
Royal Australian Chemical Institute
Victorian WorkCover Authority (WorkSafe Victoria)

Additional Interests

Environmental Science and Research New Zealand
Ministry for Primary Industries (NZ)
New Zealand Institute of Architects
New Zealand Microbiological Society
Responsible Care New Zealand
WorkSafe New Zealand

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Originated as AS 2243.2—1979.
Fifth edition AS/NZS 2243.2:2006.
Revised and redesignated as AS 2243.2:2021.

Preface

This Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee CH-026, Safety in Laboratories, to supersede AS/NZS 2243.2:2006, *Safety in laboratories, Part 2: Chemical aspects*, and AS/NZS 2243.10:2004, *Safety in laboratories, Part 10: Storage of chemicals*.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this document as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this document is to provide information, recommendations and procedures involving the use and storage of chemicals to promote safe work practices in laboratories.

Major changes in this edition are as follows:

(a) Incorporates chemical storage content from AS/NZS 2243.10, which has been withdrawn.

(b) Addition of new clauses on nanotechnology.

(c) Addition of new Appendices on nanomaterials and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

The Standard is Part 2 of an 8-part series designed to promote safety in laboratory operations, and is aimed at specific aspects of chemical safety common to laboratories.

The series comprises the following:

AS 2243.1, *Safety in laboratories, Part 1: Planning and operational aspects*

AS 2243.2, *Safety in laboratories, Part 3: Chemical aspects and storage* (this Standard)

AS/NZS 2243.3, *Safety in laboratories, Part 3: Microbiological safety and containment*

AS/NZS 2243.4, *Safety in laboratories, Part 4: Ionizing radiations*

AS/NZS 2243.5, *Safety in laboratories, Part 5: Non-ionizing radiations — Electromagnetic, sound and ultrasound*

AS/NZS 2243.6, *Safety in laboratories, Part 6: Plant and equipment aspects*

AS/NZS 2243.8, *Safety in laboratories, Part 8: Fume cupboards*

AS/NZS 2243.9, *Safety in laboratories, Part 9: Recirculating fume cabinets*

It is recommended that Part 1 be used in conjunction with this Part, and that additional Parts be obtained where applicable to the type of operations carried out in the particular laboratory.

Standards Australia thanks the International Organization for Standardization (ISO) for permission to reproduce terms and definitions as identified in Clause 1.4. These terms and definitions are copyright of ISO, Geneva, Switzerland. All rights reserved. In addition, reference was made to ISO/TR 12885:2018, *Nanotechnologies — Health and safety practices in occupational settings relevant to nanotechnologies*, in the drafting of Clause 4.9 Nanotechnology and Appendix J Nanomaterials. In this respect Clause 4.9 and parts of Appendix J can be considered as "not equivalent" (NEQ) to ISO/TR 12885:2018 as defined in ISO/IEC Guide 21-1, *Regional or national adoption of International Standards and other International Deliverables — Part 1: Adoption of International Standards*, in that the differences between the two documents are not indicated. Table J.1 is identical to ISO/TR 12885:2018 Table 2.

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The terms “normative” and “informative” are used in Standards to define the application of the appendix to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

Contents

Introduction

AS 2243.1 deals in a general manner with planning and operational safety matters, and AS 2243.2 covers operational safety when using chemicals, including the method of storage and the amounts of chemicals that can be stored in laboratories and stores associated with laboratories.

This document sets out requirements for storage within a laboratory, which is not addressed in other Standards.

AS/NZS 3833, *The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers,* is intended mainly for the storage of large quantities of predetermined dangerous goods, but excluding Packing Group I. It does not allow the storage flexibility often required for research and experimental laboratories. The required segregation distances may not be achievable in laboratories and laboratory stores. It may be more suitable for industrial applications where larger quantities of raw materials or finished products are held "in quarantine" awaiting quality assurance testing.

The relevant Standard for the particular class of dangerous goods or type of chemical may be preferable if only non-flammable dangerous goods or only one or two classes of dangerous goods or types of chemicals are stored, or they are in dominant quantities.

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Section 1 Scope and general

1.1 Scope

This document sets out requirements and recommended procedures for safe work with chemicals in the laboratory.

This document applies to —

(a) substances, mixtures or materials defined as hazardous chemicals, dangerous goods or hazardous substances, except for those that are explosive, infectious and radioactive;

(b) combustible liquids;

(c) goods too dangerous to be transported; and

(d) nanomaterials.

NOTE Refer to National, state and territory legislation for transport of dangerous goods requirements.

This document also applies to chemicals not classed as hazardous or dangerous if compatibility problems could arise during storage.

This document also sets out the requirements for the safe keeping and storage of chemicals and gases —

(i) inside a laboratory; and

(ii) in associated storerooms or spaces which are support areas to the laboratory.

The requirements of this document apply only to the keeping, in use or storage, of chemicals in packages and apparatus.

1.2 Application

This Standard is intended to be used in conjunction with AS 2243.1, which provides requirements and recommendations on matters common to all types of laboratory work.

Where the size of packages of chemicals or the aggregate quantities to be stored exceed the limitations of this document, reference should be made to —

(a) AS 1940, for storage of flammable and combustible liquids;

(b) AS/NZS 1596, for LP Gas;

(c) AS 3780, for storage and handling of corrosive substances; or

(d) other appropriate Australian, Australian/New Zealand or New Zealand Standards.

NOTE Refer to national, state and territory regulations for specific information.