Australian/New Zealand Standard™

Safety in laboratories

Part 10: Storage of chemicals

STANDARDS AUSTRALIA

STANDARDS NEW ZEALAND
Paerewa Aotearoa

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 27 April 2004 and on behalf of the Council of Standards New Zealand on 7 May 2004. It was published on 1 June 2004.

The following are represented on Committee CH-026:

Australian Government Analytical Laboratories
Australian Industry Group
Australian Institute of Occupational Hygienists
CSIRO
Department of Labour, New Zealand
Department of Primary Industries (Victoria)
Ministry of Economic Development, New Zealand
National Association of Testing Authorities, Australia
The New Zealand Chemical Industry Council
New Zealand Microbiological Society
Victorian WorkCover Authority
WorkCover New South Wales

Additional interests participating in the preparation of this Standard:

Fume extraction equipment manufacturing interests
Independent consultant health physicist
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We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia International or Standards New Zealand at the address shown on the back cover.

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Part 10: Storage of chemicals

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PREFACE

This Standard was prepared by Joint Standards Australia/Standards New Zealand Committee CH-026, Safety in Laboratories to supersede AS 2243.10—1993.

The objective of this Standard is to provide information on appropriate storage of chemicals and dangerous goods both within laboratories and within dedicated storage areas that are support areas for a laboratory.

This edition has been prepared to take into account several new Standards published on storage and handling of chemicals, to align it with current editions of other referenced documents and to make it appropriate for use in New Zealand.

The major changes in this edition are—

(a) consolidation of storage area requirements from two types differentiated by capacity to one;

(b) addition of more specific requirements for storage of chemicals within a laboratory; and

(c) an increased alignment with and reference to the requirements in other Standards covering storage of chemicals.

Existing storage facilities will, in many instances, not comply with this Standard. In the interests of laboratory safety, a high priority should be allocated to the preparation of a program for upgrading storage facilities to meet the requirements of this Standard. Existing facilities should be assessed for risk and interim control measures implemented, depending on the time frame decided for the upgrading program.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard.

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.

This publication is Part 10 of a series of Standards prepared to promote safe working in laboratories. The Parts in the series are as follows:

Part 1: General

Part 2: Chemical aspects

Part 3: Microbiological aspects and containment facilities

Part 4 Ionizing radiations

Part 5: Non-ionizing radiations—Electromagnetic, sound and ultrasound

Part 6: Mechanical aspects

Part 7: Electrical aspects

Part 8: Fume cupboards

Part 9: Recirculating fume cabinets

Part 10: Storage of chemicals (this Part)

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FOREWORD

Some legislation refers to various parts of the AS/NZS 2243 series and AS/NZS 2982.1 as the guidelines for the use and storage of dangerous goods in laboratory environments. Readers of this Standard should investigate if legal requirements are applicable to their situation as these will take precedence over the requirements in this Standard.

AS/NZS 2243.1 deals in a general manner with operational safety matters and AS/NZS 2243.2 covers operational safety when using chemicals, without giving guidelines on the method of storage or the amounts of chemicals that can be stored in laboratories. AS/NZS 2982.1 deals briefly with the design of chemical stores and refers to AS 1940 for the design of stores for flammable and combustible liquids.

The information in the above Standards is not comprehensive and does not specify the manner in which chemicals, including dangerous goods of various classes, should be stored in laboratories and associated stores. This Standard provides detailed specifications for the storage of chemicals, including dangerous goods, in laboratories. It does not deal with the following dangerous goods: Class 1 (Explosives); Class 6.2 (Infectious substances); and Class 7 (Radioactive substances). However, other parts of AS/NZS 2243 cover the safe storage and handling of some of these materials.

In most storage situations, several Standards may need to be considered. For laboratories, the Standards to be considered may be as follows:

(a) This Standard.

(b) The relevant Australian, New Zealand or Joint Australian/New Zealand Standard for each individual class of dangerous goods or type of chemical to be stored.

(c) AS/NZS 3833 for the storage of mixed classes of dangerous goods.

This Standard allows a high level of flexibility if a large range of chemicals need to be stored but is severely limiting in the total quantities that can be stored. This Standard also sets out requirements for storage within a laboratory, which is not addressed in other Standards.

For storage separate from a laboratory, there will be situations when any of the three options listed above may be applied.

Sections 5 and 6 of this Standard may be applied except where quantities or pack sizes larger than those permitted in this Standard need to be stored. In such cases, the Standard applicable to the Class of dangerous good or the type of chemical, or AS/NZS 3833 for mixed classes of chemicals would be applicable.

The relevant Standard for the particular Class of dangerous goods or type of chemical (see list in Appendix A) 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.

AS/NZS 3833 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. Its required segregation distances are not normally available in laboratory stores. It might be more suitable for industrial applications where larger quantities of raw materials or finished products are held ‘in quarantine’ awaiting quality assurance testing.

Whichever Standard is chosen for the separate chemical storage area, it needs to be applied in full.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out the requirements for the safe keeping of chemicals in packages—

(a) when stored inside a laboratory;

(b) stored in associated storerooms or spaces which are support areas to the laboratory; and

(c) when opening packages.

NOTE: The relationship between this Standard and other Standards on the storage of chemicals is provided in the Foreword.

1.2 APPLICATION

This Standard applies to —

(a) substances defined as hazardous in NOHSC 1008.

(b) dangerous goods, as defined in Clause 1.4.6, except for dangerous goods of Class 1 (Explosives), Class 6.2 (Infectious substances) or Class 7 (Radioactive substances);

(c) combustible liquids as defined in Clause 1.4.15.1; and

(d) goods too dangerous to be transported under the ADG Code.

NOTE: There are separate National, State and Territory legislation on explosives and National, State and Territory requirements for infectious substances, carcinogenic materials, scheduled poisonous substances and storage in bulk. In Australia, radioactive substances are covered by State and Federal legislation with Federal requirements for the safe handling and transport of radioactive substances.

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

NOTE: The term ‘chemical’ includes, but is not limited to, a pure element, a compound of a number of elements, or a mixture of two or more such compounds, and any solution, suspension, fume or aerosol thereof.

The requirements of this Standard apply only to the keeping, in use or storage, of chemicals in packages. There are no restrictions on the size of packages of chemicals that are not classed as hazardous substances or dangerous goods.

The storage requirements do not apply if the chemicals are—

(i) currently being processed or used in experimental operations such as reaction, blending or mixing; or

(ii) kept in the laboratory prior to use within the next 12 h or following use within the previous 12 h and their quantity or inherent hazard do not create any significant danger to persons or the environment.