Dup Under Revision See DR 96111

SUPERSEDED BY: AS/NZS 2243.1:1997

AS 2243.1—1990

Australian Standard®

Safety in laboratories

Part 1: General

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STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee CH/26, Safety in Laboratories. It was approved on behalf of the Council of Standards Australia on 11 June 1990 and published on 15 October 1990.

The following interests are represented on Committee CH/26:

Australian Government Analytical Laboratories

Australian Institute of Petroleum

National Association of Testing Authorities, Australia

Additional interests participating in preparation of Standard:

Australian Nuclear Science and Technology Organization

Department of Agriculture and Rural Affairs

Prince Henry Hospital

University of Melbourne

This Standard was issued in draft form for comment as DR 89193.

Dup

STANDARDS AUSTRALIA

Amendment No 1
to
AS 2243.1—1990
Safety in laboratories
Part 1: General

REVISED TEXT

The 1990 edition of AS 2243.1 is amended as follows; the amendments should be inserted in the appropriate place.

SUMMARY: This Amendment applies to Clauses 1.4.18, 1.4.19, 2.7 and 3.1.1.

Published on 9 August 1991.

AMDT No 1 AUG 1991

Page 6 New Clauses 1.4.18 and 1.4.19

Add new clauses as follows:

1.4.18 Flammable liquid—a liquid which has a flashpoint below 61 °C. (See AS 1940.)

1.4.19 Laboratory compartment—a fire-isolated compartment in a laboratory, being either the whole laboratory or a subdivision of the laboratory, complying with the limitations given in AS 2982. Laboratory compartments may be of four types according to their flammability hazard rating of high, medium, low, or very low in accordance with AS 2982.

NOTE: A laboratory compartment may be divided into subcompartments, such as workrooms, stores or offices, or may be an open-plan area.

AMDT No 1 AUG 1991

Page 10 Clause 2.7

Delete existing clause and *substitute* the following:

2.7 STORAGE OF HAZARDOUS SUBSTANCES

2.7.1 General Special provisions shall be made for the safe handling and storage of hazardous substances. For information on the design and construction of installations for the storage and handling of flammable and combustible liquids, see AS 1940 and AS 2982. Storage cabinets for flammable liquids shall comply with AS 2982. Additional advice can be obtained from local and state regulatory authorities.

2.7.2 Flammable liquids Flammable liquids shall not be stored in laboratory compartments in amounts exceeding the quantities shown in AS 2982 and AS 1940 or in relevant government regulations.

2.7.3 Change in laboratory functions Before a change is made in the function of a laboratory compartment which involves the storage or use of chemicals, that compartment shall be assessed for its suitability for the new function.

AMDT No 1 AUG 1991

Page 11 Clause 3.1.1(i)

Delete existing Clause 3.1.1(i) and *substitute* the following:

(i) Updating safety procedures when new chemical compounds or methods are introduced, or when the function of the laboratory compartment is changed.

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Australian Standard®

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PREFACE

This Standard was prepared by the Standards Australia Committee on Safety in Laboratories, under the direction of the Chemical Standards Board, to supersede the 1982 edition. This edition includes a major revision to Section 2 in light of the publication of AS 2982, *Laboratory construction*, and to Section 3 to elaborate on the responsibilities for laboratory safety.

The Standard comprises Part 1 of a nine-part series designed to provide basic coverage of all important aspects of the safety function in laboratories. It deals with the general aspects of safety common to all kinds of laboratories and is intended to be used in conjunction with other Parts of the series, which relate to particular aspects of laboratory operations and to particular kinds of hazard. It stresses the importance of preventive measures and sets out the organization of safety techniques, emergency procedures, and first aid.

The other Parts in the series are as follows:

Part 2: Chemical aspects
Part 3: Microbiology
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

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FOREWORD

Safety in laboratories is an individual and personal responsibility, as well as being a management responsibility. Staff training is generally directed towards making safety considerations an attitude of mind, and an integral part of all laboratory procedures so that a constant purposeful control of the laboratory environment will result.

No document can ensure safe practice within the laboratory. The best that it can do is to impart the necessary awareness and information required. The final responsibility for safe conduct always rests with the individual. To help in maintaining optimum safety in a laboratory, however, each laboratory section should become the responsibility of one individual.

Responsibility for the enforcement of safety rules, and for the promulgation of the necessary information, devolves upon the senior members of the laboratory. It is their duty to supervise their less experienced colleagues and to acquaint them with the potential hazards involved in every reaction and operation, so that, from the very beginning, new staff become safety-conscious and learn the techniques of safe working. The rules of safety should be so well ingrained in every employee that their observance becomes a habitual attitude of mind. It cannot be over-emphasized that personal attitude is just as important to safety as the learning of relevant facts. New staff, and particularly young students or graduates, are likely to be over-enthusiastic, and may take risks to save time. Firm, but diplomatic, personal supervision by senior staff at an early stage will help establish a team spirit, and foster a respect for laboratory safety—factors of foremost importance in the safe and smooth functioning of a laboratory.

STANDARDS AUSTRALIA

Australian Standard
Safety in laboratories

Part 1: General

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard provides information and sets out recommendations, general procedures and precautions designed to promote safety of persons and property in laboratory operations. The safety aspects described in this Standard apply to personnel who use the laboratory facilities including students, visitors, maintenance staff, cleaners, laboratory staff, contractors, security staff and other authorized personnel. This Standard deals specifically with safe practices in laboratories and does not cover the design and construction of laboratories, which is the subject of AS 2982.

1.2 APPLICATION This Standard should be used in conjunction with the appropriate part(s) of AS 2243 that are relevant to the type of work being carried out in the laboratory. Where the requirements of any part of this Standard are covered by state or Commonwealth regulations, then these should also be read in conjunction with this Standard and, where any conflict exists between the two, the provisions of the statutory regulations shall apply.

1.3 REFERENCED AND RELATED DOCUMENTS A list of referenced and related documents is given in Appendix A.

1.4 DEFINITIONS For the purpose of this Standard, the definitions below apply.

1.4.1 Accident—any occurrence which results in personal injury, disease or death, or property damage.

1.4.2 Auto-ignition temperature—the lowest temperature at which a vapour will spontaneously catch fire in air.

NOTE: If vapour from a liquid at room temperature is carried by draught into contact with a surface above the ignition temperature, the vapour may ignite and burn back to ignite the liquid.

1.4.3 Corrosive—having the characteristic of damaging or destroying by direct chemical action; this includes the effect of caustic substances.

1.4.4 Exposure standard—an airborne concentration of a particular substance in the worker's breathing zone, exposure to which, according to current knowledge, should not cause adverse health effects nor cause undue discomfort to nearly all workers. The exposure standard can be of three forms: time-weighted average, peak, or short-term exposure limit.

(a) *time-weighted average (TWA)*—the average airborne concentration of a particular substance when calculated over a normal eight-hour work day, for a five-day working week.

(b) *peak*—a maximum or peak airborne concentration of a particular substance determined over the shortest analytically practicable period of time, which does not exceed 15 min.

(c) *short-term exposure limit (STEL)*—a 15 min TWA exposure which should not be exceeded at any time during a work day even if the eight-hour TWA average is within the TWA exposure standard. Exposure at the STEL should not be longer than 15 min and should not be repeated more than four times per day. There should be at least 60 min between successive exposures at the STEL.

1.4.5 Flammable—capable of being readily ignited and of burning in air.

1.4.6 Flashpoint—the lowest temperature at which application of a small flame causes the vapour above a flammable liquid to produce a momentary flash when it is heated under standardized conditions specified in an appropriate test method, e.g. AS 2106.

1.4.7 Harmful processes—processes in which energy or harmful substances are used or produced and which, upon uncontrolled release, may cause injury to persons or damage property.

1.4.8 Hazardous materials—materials which, alone or in combination with others, are or could become toxic, irritant, explosive, flammable, corrosive, or noxious, and for which special precautions are required.

NOTE: Included in this definition are all materials that are classified as 'dangerous goods' by the Australian Code for the Transport of Dangerous Goods by Road and Rail.

1.4.9 Head officer—the person appointed by the organization to be accountable for all functions of the laboratory area.