AS 2243, Part 2—1979
UDC 614.8.006.25

Australian Standard 2243, Part 2—1979

SAFETY IN LABORATORIES PART 2—CHEMICAL

STANDARDS ASSOCIATION OF AUSTRALIA
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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Agricultural and Veterinary Chemicals Association of Australia

Australian Chamber of Commerce

Australian Chemical Industry Council

Australian Council of Trade Unions

Australian Institute of Petroleum

Australian Medical Association

Australian Road Transportation Federation

Board of Fire Commissioners of New South Wales

Confederation of Australian Industry

Department of Defence

Department of Labour and Industry, New South Wales

Department of Minerals and Energy

Department of Productivity

Department of Science and the Environment

Department of Transport

Health Commission of New South Wales

Insurance Council of Australia

Metropolitan Fire Brigade Board, Melbourne

Public Health Department, Western Australia

National Health and Medical Research Council

Railways of Australia Committee

University of Sydney

This standard, prepared by Committee CH/26, Safety in Laboratories, was approved by the Chemical Standards Board on behalf of the Council of the Standards Association of Australia on 4 June 1979, and was published on 1 August 1979.

To keep abreast of progress in industry, Australian standards are subject to regular review. Suggestions for improvements, addressed to the head office of the Association, are welcomed.

This standard was issued in draft form for public review as DR 78034.

AUSTRALIAN STANDARD

CODE OF PRACTICE FOR
SAFETY IN LABORATORIES

Part 2
CHEMICAL

AS 2243, Part 2—1979

First published 1979

PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY, N.S.W.

ISBN 0 7262 1735 2

PREFACE

This standard was prepared by the Association's Committee on Safety in Laboratories under the direction of the Chemical Standards Board.

It is the second Part of an overall standard designed to promote safety in laboratory operations, and is aimed at specific aspects of safety common to chemical laboratories. Essential safety procedures and recommended practices are outlined in respect of flammable, toxic, unstable, and highly reactive chemicals. Special coverage is given to the handling and storage of compressed and liquefied gases.

Other Parts are as follows:

Part 1—General

Part 3—Microbiology

Part 4—Ionizing Radiations

Part 5—Non-ionizing Radiations

Part 6—Mechanical Aspects

Part 7—Electrical Aspects

It is recommended that in respect of chemical laboratories Part 1 be obtained for use in conjunction with this Part, and that additional Parts be obtained where justified by the type of operations carried out in the particular laboratory.

Attention is drawn to the loose-leaf format of this standard, which is intended to facilitate rapid revision by substitution of replacement pages or addition of new ones. Users wishing to suggest revisional material are invited to submit the full wording of replacement pages or clauses, to assist in the process of prompt revision.

This Part makes reference to the following Australian standards:

AS 1076	Code of Practice for Selection, Installation and Maintenance of Electrical Apparatus and Associated Equipment for Use in Explosive Atmospheres
AS 1169	SAA Medical Agents and Gases Safety Code
AS 1216	Code of Practice for Safe Handling of Dangerous Goods Part 1—Classification and Class Labels for Dangerous Goods
AS 1336	Code of Practice for Industrial Eye Protection
AS 1337	Industrial Eye Protectors
AS 1715	Code of Practice for Respiratory Protection
AS 1716	Respiratory Protective Devices
AS 1846	Dry Chemical Type Portable Fire Extinguishers
AS 1847	Carbon Dioxide Type Portable Fire Extinguishers
AS 1848	Halogenated Hydrocarbon Type Portable Fire Extinguishers
AS 1894	Code of Practice for the Safe Handling of Cryogenic Fluids
AS 2030	SAA Gas Cylinders Code
AS 2161	Industrial Safety Gloves and Mittens (Excluding Electrical and Medical Gloves)
AS 2208	Safety Glazing Materials for use in Buildings (Human Impact Considerations)
AS 2210	Safety Footwear
AS	Laboratory Design and Construction for Safe Working Conditions*

*In course of preparation.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
CODE OF PRACTICE FOR SAFETY IN LABORATORIES
PART 2—CHEMICAL

SECTION 1. SCOPE, DEFINITIONS AND ORGANIZATION OF LABORATORY SAFETY

1.1 SCOPE. This Part of the code outlines essential and recommended practices, and information on hazards, necessary for the safe conduct of operations within chemical laboratories.

1.2 DEFINITIONS. For the purposes of this Part of the code, the following definitions apply:

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

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 of test laid down by an appropriate test method. (See AS 1216, Part 1 and AS 2106.)

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.

Toxic (poisonous) chemical—a substance which when introduced in sufficient quantity into an animal organism by ingestion, inhalation or absorption, destroys or threatens to destroy life, or injures health.

NOTE: The word 'toxic' has the same meaning as 'poisonous'.

Threshold limit value (TLV)—a reference to the airborne concentrations of substances. TLVs are guides to provide safe working room air for nearly all workers. They may be expressed in three ways; most commonly as time weighted averages for the working week, but also as ceiling values which should never be exceeded, or as short-term exposure limits. These values are subject to review in the light of any new knowledge.

NOTE: For currently accepted TLV figures, refer to 'Atmospheric Contaminants', published by the National Health and Medical Research Council, and based on the recommendations of the American Conference of Governmental Industrial Hygienists.

Cryogenic fluids (see AS 1894)—fluids having a boiling point below 200 K (−73°C) at atmospheric pressure (i.e. approximately 100 kPa).

NOTE: The limiting temperature selected for defining cryogenic substances is somewhat arbitrary and many variations appear in the literature. This definition is satisfactory for the present purpose but may vary from others encountered elsewhere.

Accident—any incident that has caused or might reasonably be expected to have caused injury to persons, or damage to property or both.

1.3 ORGANIZATION OF LABORATORY SAFETY.

1.3.1 Safe Conduct.

(a) Never adopt a casual attitude in the laboratory and always be conscious of the potential hazards.

(b) Ensure that appropriate protective clothing and devices are provided and used, i.e. as approved under Australian standards.

(c) Never run in the laboratory or along corridors.

(d) Never indulge in horseplay in the laboratory.

(e) Always exercise care when opening and closing doors on entering or leaving the laboratory.

(f) Do not work in isolation in a laboratory; a second person should be within call.

(g) Do not handle or consume food or drink in laboratories.

(h) Regard all substances as hazardous unless there is definite information to the contrary.

(j) Never undertake any work unless the hazards of the operation are known as precisely as possible and the appropriate safety precautions adopted.

(k) Always use safety carriers for transporting glass or plastics containers of 2 L or larger. Exercise particular caution when carrying containers of mutually reactive substances.

1.3.2 Housekeeping.

(a) Keep benches, shelves and cupboards clean and tidy. Apparatus and reagents should be cleaned and put away immediately after use. Hazardous chemicals should be safely stored.

(b) Clean up after each stage of an experiment. Apparatus which has contained harmful chemicals shall be rinsed before being left for final cleaning.

(c) Clean up spilt material immediately, using a suitable procedure for that particular substance, so as to avoid the potential hazards resulting from corrosivity, fumes, slipperiness, reactivity, toxicity or flammability. Strong acids, for example, require the use of sodium carbonate to neutralize the acid. Suitable gloves and plenty of water are needed in cleaning operations, but not such quantities of water that the spillage is spread unnecessarily.

Absorbent materials should be used to clean up spills of organic liquids; flammable products should be cleaned up with absorbent rags.