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Australian Standard 2243, Part 3—1979

SAFETY IN LABORATORIES PART 3—MICROBIOLOGY

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

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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 Industrial Relations and Technology, 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

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AUSTRALIAN STANDARD

CODE OF PRACTICE FOR SAFETY IN LABORATORIES

Part 3 MICROBIOLOGY

AS 2243, Part 3—1979

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PREFACE

This standard was prepared by the Association's Committee CH/9, Safe Handling of Chemicals, work in this area having subsequently been re-allocated to Committee CH/26, Safety in Laboratories. The need for this standard was recognized by Committee CH/9 and subsequently confirmed by an extensive survey conducted within government departments, industrial organizations and educational institutions.

It is the third Part in a series aimed at full coverage of the safety function in laboratories. It deals with microbiological aspects of laboratory work and is intended to be used in conjunction with other Parts in the series, each one relating to particular aspects of laboratory operations and to particular kinds of hazard. Emphasis is placed on awareness of risks, adequate hygiene and preventive action. Attention is given to the management and organization of work for preventing infection or contamination. Safety procedures and first aid measures are included, together with a useful bibliography.

Other Parts are as follows:

Part 1—General
Part 2—Chemical
Part 4—Ionizing Radiations
Part 5—Non-ionizing Radiations
Part 6—Mechanical Aspects
Part 7—Electrical Aspects

This standard deals specifically with safe practices in laboratories and does not cover the design and construction of laboratories, which is the subject of a separate standard being prepared by a committee within the Association's Building and Civil Engineering Group.

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 1113	Laboratory Fume Cabinets (Non-Injection Type)
AS 1132	Methods of Test for Air Filters for Use in Air Conditioning and General Ventilation
AS 1324	Air Filters for Use in Air Conditioning and General Ventilation
AS 1336	Code of Practice for Industrial Eye Protection
AS 1337	Industrial Eye Protectors
AS 1885	Code of Practice for Recording and Measuring Work Injury Experience
AS 2252	Biological Safety Cabinets
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 3—MICROBIOLOGY

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This Part of the code is intended only for use in microbiological aspects of laboratory work; biohazards involved in other types of biological laboratory work are not considered. Nor are these guidelines sufficiently comprehensive to apply to laboratories engaged in research in molecular biology or genetics, or to those handling highly infectious pathogens, e.g. certain *Brucella* spp. They are intended only for laboratories, including animal houses, where microbiological work such as quality control or regulatory analysis is undertaken, e.g. of foodstuffs, water and effluents, pharmaceuticals and cosmetics or for teaching and hospital laboratories. Details of other, e.g. fire, chemical, hazards are dealt with in other Parts of this code.

1.2 INTRODUCTION.

1.2.1 Safety Attitudes. Safety in all laboratories must be regarded as an individual and personal as well as a management, responsibility. Staff training should be directed toward making safety considerations an attitutde of mind and an integral part of all laboratory procedures, so that a constant, purposeful, control of the laboratory environment will result.

1.2.2 Specific Microbiological Problems. Microbiological laboratories pose specific problems in addition to many of those commonly encountered in chemical laboratories. Paramount is the possibility of infection, both of laboratory staff, and of the general public or of animals (by dissemination of pathogens outside the laboratory). Infection can result from ingestion, inhalation or skin penetration. In particular, staff having little or no microbiological training, e.g. laboratory attendants and new recruits, should not be exposed to situations in which they may not appreciate the potential hazards.

It is also important to prevent cross-contamination or contamination with adventitious microorganisms since they may completely nullify experimental procedures or lead to erroneous results. The latter occurring in a hospital or public health laboratory could well result in the erroneous or unnecessary treatment of patients.

1.2.3 Special Awareness Requirements. Microbiological hazards are particularly insidious because of the microscopic size of organisms. It is also essential to be aware that the 'unseen' hazard, e.g. formation of an invisible aerosol, may be of greater significance than the more obvious accident. Further, organisms not generally regarded as pathogens may, in some circumstances, assume that role.

THE SAFEST PROCEDURE IS TO REGARD ALL MICROORGANISMS AS POTENTIAL PATHOGENS AND TREAT THEM ACCORDINGLY.

All laboratories should note that a classification of microorganisms according to hazard has been published by the U.S. Public Health Service.*

1.3 DEFINITIONS. For the purpose of this Part of the code, the following definitions apply:

1.3.1 Microbiology—the study of living organisms which are of microscopic size or contain a microscopic stage in their life-cycle.

1.3.2 Aseptic technique—the exercise of special procedures for maintaining the sterility of equipment, media, etc or the purity of cultures by eliminating adventitious contamination.

1.3.3 Viable—living: capable of growth even though resuscitation procedures may be required, e.g. when organisms are freeze-dried, sub-lethally damaged.

1.3.4 Pathogen—an organism capable of causing disease in man, animals or plants.

1.3.5 Cross-contamination—the undesirable transfer of organisms from one person, material or environment to another.

1.3.6 Antiseptic—a substance capable of destroying or preventing growth of microorganisms under prescribed conditions of use and specifically for application to living tissues.

1.3.7 Disinfectant—a substance capable of killing pathogenic microorganisms, usually confined to the treatment of inanimate objects.

1.3.8 Sterilization—an act or process which kills all living organisms, applied particularly to viruses, bacteria and moulds, and their spores.

1.3.9 Infectious—capable of invading a susceptible host, multiplying in it, and causing an altered host reaction, commonly called a disease.

*See Reference D2.6.