

Australian/New Zealand Standard™

**Guide to the safe use of lasers in health
care**

AS/NZS 4173:2004

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee HE-003, Medical Electrical Equipment. It was approved on behalf of the Council of Standards Australia on 18 October 2004 and on behalf of the Council of Standards New Zealand on 15 October 2004.

This Standard was published on 22 November 2004.

The following are represented on Committee HE-003:

Australasian College of Physical Scientists and Engineers in Medicine
Australasian Society for Ultrasound in Medicine
Australian Chamber of Commerce and Industry
Australian Dental Association
Australian Institute of Radiography
Australian Radiation Protection and Nuclear Safety Agency
Australian Society of Anaesthetists
Australian and New Zealand College of Anaesthetists
Canterbury District Health Board, New Zealand
College of Biomedical Engineering Institution of Engineers Australia
Commonwealth Department of Health and Ageing
Department of Defence (Australia)
Medical Industry Association of Australia
Ministry of Economic Development, New Zealand
Royal Australian and New Zealand College of Radiologists
Testing Interests (Australia)
Wairarapa District Health Board, New Zealand

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AS/NZS 4173:2004

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Guide to the safe use of lasers in health care

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Sub-Committee HE-003-12, Lasers in Medical Procedures, under the responsibility of Committee HE-003, Medical Electrical Equipment, to supersede AS/NZS 4173:1994, *Guide to the safe use of lasers in health care*.

The following interests played a major role in the preparation of this Standard:

Australasian Medical and Clinical Laser Association

Australian and New Zealand College of Anaesthetists

Australian College of Operating Room Nurses

Australian Medical and Clinical Laser Association

Australian Medical Association

Health Department of Western Australia

Hutt Valley District Health Board, New Zealand

Department of Health, N.S.W.

Dunedin Hospital, New Zealand

Queensland Health

Royal Australasian College of Ophthalmologists

Royal Australian College of Physicians

The objective of this Standard is to provide guidance in the safe use of lasers and laser systems for diagnostic, cosmetic and therapeutic uses in health care facilities (including hospitals, private medical facilities and dental practices). To this end, it includes explanations of basic laser physics and radiation/tissue interactions, and also identifies engineering and administrative control measures designed to avoid the most significant hazards. Protocols to be observed during specialist medical and dental procedures are also included.

It is not intended that the recommended control measures should restrict or limit the use of laser radiation which may be intentionally administered to a patient for diagnostic, cosmetic, therapeutic, surgical or medical research purposes. However, the controls are those considered necessary for the safety of all attending staff, as well as those which should be considered as fundamental to patient safety.

This Standard was prepared in the knowledge that separate Standards were being developed for medical laser equipment (to supplement the safety procedures and requirements of AS/NZS 2211.1) and for medical laser installations. These Standards will incorporate mandatory engineering and installation requirements to be observed by the manufacturers and constructors. Accordingly, this Standard concentrates on identifying those administrative needs and user precautions which are of equal importance. In particular, the importance of staff training is emphasized and this Standard—

- (a) identifies appropriate levels of staff training (i.e. not all staff need to be trained to the same level); and
- (b) recommends that relevant educational organizations insist on formal medical laser training and certification of post-graduate specialists.

The laser types and applications addressed in this Standard are current at the time of writing. Given the rapid development in the field, efforts will be made to revise the Standard as the technology and its applications change.

This Standard differs from the 1994 edition in the following respects:

- (i) Changes to the laser classification scheme (taking into consideration the 2004 revision of AS/NZS 2211).
- (ii) The terminology and language used in the new edition better reflect its intended purpose as a 'guide', making it easier to read, interpret, and implement where applicable, for users and administrators alike.
- (iii) Descriptions and definitions have been updated, taking into account the immense changes in the technology and science of lasers in health care since 1994.
- (iv) The new version incorporates examples relevant to a broader target audience, reflecting the evolution and diversity of laser use in health care.
- (v) The greatly expanded Appendices address, in a more practical and usable form, the administrative aspects of implementing safe laser practices and procedures at both individual and institutional levels.

Standards Australia acknowledges the contribution of the Australian Centre for Medical Laser Technology to 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.

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