

Radiation Safety Act 1999

RADIATION SAFETY STANDARD

NM006:2010

Standard for radiation apparatus used to carry out industrial gauging

Preface

Under section 17 of the *Radiation Safety Act 1999*, a possession licensee who, under a licence, possesses an ionising radiation apparatus to carry out a radiation practice, must ensure that the apparatus is not used for this purpose, unless the radiation apparatus complies with the relevant standard.

This radiation safety standard NM006:2010 *Standard for radiation apparatus used to carry out industrial gauging* is made under section 16 of the *Radiation Safety Act 1999*.

This standard sets the minimum safety criteria for radiation apparatus used to carry out industrial gauging. Compliance with this standard will assist in ensuring that public and occupational exposure to radiation is minimised.

Queensland Health has prepared this standard based on information derived from reputable sources such as the National Health and Medical Research Council.

The standard will be reviewed periodically to re-evaluate its currency and its appropriateness as the standard for radiation apparatus used for industrial gauging.

By ensuring compliance with this radiation safety standard, the standard of radiation apparatus used for industrial gauging in Queensland will be significantly enhanced.

I, Paul Lucas, Deputy Premier and Minister for Health, pursuant to section 16(1) of the *Radiation Safety Act 1999*, make the radiation safety standard NM006:2010 *Standard for radiation apparatus used to carry out industrial gauging*, for the purposes of the Act.

SIGNED

PAUL LUCAS MP
Deputy Premier
Minister for Health

19 / 08 / 2010

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Standard for radiation apparatus used to carry out industrial gauging

Section 1 – General

1.1 Scope

This radiation safety standard sets out the minimum requirements for ionising radiation apparatus that is used to carry out industrial gauging.

1.2 Expiry

This radiation safety standard expires on 1 September 2020.

1.3 Documents

Documents which may provide a useful reference are listed in Appendix A.

1.4 Definitions

In this standard -

“**industrial gauging**” means where a radiation apparatus is used for the measurement of thickness, level and density gauging or for control purposes. The radiation apparatus is generally installed in a fixed position.

“**radiation dose rate**” means the amount of energy from radiation absorbed by the person or thing exposed to the radiation during a particular time.

Section 2 - Standard – Industrial X-ray gauges

Test	Compliance Test	Criteria for Passing the Test
Radiation dose rate		
1	Radiation dose rate	<p>When the X-ray tube assembly is energised, operating at its maximum output and with the shutter closed, the radiation level must not exceed:</p> <p>(a) 300μSv in one hour at any accessible point 5 centimetres from the external surface of the tube housing or shielded enclosure; and</p> <p>(b) 10μSv in one hour at any point one metre from the surface of the tube housing or shielded enclosure.</p>
Warning signs		
2	Indicators	<p>Whenever the shutter or source control mechanism is in either the “beam on” or “beam off” position, that condition must be clearly and unambiguously indicated.</p> <p>If a mechanical indicator is used, the indicator must not be obscured by dust, corrosion or paint.</p> <p>If an electrical indicator is used, it must:</p> <p>(a) include separate lamps or signals to indicate the “beam on” and “beam off” conditions; and</p> <p>(b) be designed to be fail safe in the event of a lamp failure.</p>
3	Radiation warning sign	<p>The radiation apparatus must be durably and legibly marked with a metal label incorporating the following:</p> <ul style="list-style-type: none"> • radiation warning sign (trefoil) • the words “caution” or “warning” • words to the general form of “radiation source” <p>The symbol and lettering must be black on a yellow background.</p> <p>The radiation apparatus must also be legibly marked with a metal label containing the following information:</p> <ul style="list-style-type: none"> • manufacturer name, model and serial number of the radiation gauge, tube housing and/or shielded enclosure • manufacturer name, model and serial number of the tube insert • maximum rated tube potential (kVp) • position of the focal spot • maximum radiation dose rate at 1 metre from the surface of the tube housing or shielded enclosure (with all shutters closed) and the date this measurement was made

Test	Compliance Test	Criteria for Passing the Test
Shutter mechanism		
4	Shutter available	A shutter must be fitted to the tube housing unless a specific approval has been given for the specific radiation apparatus, in writing, by the chief executive.
5	Shutter or source control mechanism	A shutter or source control mechanism must be manually operated or power operated, and must be fail safe.
6	Shutter lock	The shutter, if fitted to the tube housing, must be provided with a lock so that it can be secured in the "beam off" position.
Interlocks		
7	Interlocks	<p>If primary shielding is provided by a shielded enclosure, interlocks must be fitted to the enclosure to switch off the X-ray tube if the enclosure is opened.</p> <p>If primary shielding is provided by both tube housing and shielded enclosure, the design of the gauge must use tube housing shutters and/or interlocks to prevent access to the primary beam.</p>
8	Panels secured	<p>Panels, provided for maintenance access or other purposes, which could permit access to the primary beam must be:</p> <p>(a) secured so that tools or keys are required to open them; and</p> <p>(b) provided with at least one safety interlock and a label that warns of the presence of an X-ray tube within.</p>
Handling		
9	Handling features	<p>The radiation apparatus must:</p> <p>(a) be provided with means for manual handling if it has a gross mass between 10 kilograms and 50 kilograms; and</p> <p>(b) have features to enable safe handling by mechanical means if it has a gross mass over 50 kilograms.</p>

Appendix A

Documents

Australian Radiation Protection and Nuclear Safety Agency. Code of Practice and Safety Guide for Safe Use of Fixed Radiation Gauges (2007)