



Radiation Safety Act 1999

RADIATION SAFETY STANDARD

NM010:2020

Standard for sealed radioactive substances incorporated in sealed source apparatus used to carry out borehole logging

Preface

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

This radiation safety standard NM010:2020 *Standard for sealed radioactive substances incorporated in sealed source apparatus used to carry out borehole logging* is made under section 16 of the *Radiation Safety Act 1999*.

This standard sets the minimum safety criteria for sealed source apparatus used to carry out borehole logging. 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 borehole logging apparatus.

By ensuring compliance with this radiation safety standard, the standard of sealed source apparatus used for borehole logging in Queensland will be significantly enhanced.

I, Steven Miles, Deputy Premier and Minister for Health and Minister for Ambulance Services, pursuant to section 16(1) of the *Radiation Safety Act 1999*, make the radiation safety standard NM010:2020 *Standard for sealed radioactive substances incorporated in sealed source apparatus used to carry out borehole logging*, for the purposes of the Act, and repeal the previous standard NM010:2010 *Standard for sealed radioactive substances incorporated in sealed source apparatus used to carry out borehole logging*.

STEVEN MILES MP
Deputy Premier and
Minister for Health and
Minister for Ambulance Services

25 May 2020

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Standard for sealed radioactive substances incorporated in sealed source apparatus used to carry out borehole logging

Section 1 – General

1.1 Scope

This radiation safety standard sets out the minimum requirements for sealed radioactive substances in sealed source apparatus which is used to carry out borehole logging.

1.2 Expiry

This radiation safety standard expires on 1 September 2021.

1.3 Documents

Documents which may provide some useful information are listed in Appendix A.

1.4 Definitions

In this standard –

“**borehole logging**” means where a sealed radioactive substance or substances are used through wireline logging for investigating the physical properties of the geological sequence, or any fluids contained in the geological sequence, or the properties of the borehole itself.

“**ISO**” means the International Organization for Standardization.

“**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 – Borehole logging apparatus

Test	Compliance Test	Criteria for Passing the Test
Radioactive substance details		
1	Radioactive substance certification	The sealing of the radioactive substance must: <ul style="list-style-type: none"> (a) satisfy the requirements of ISO2919-1980(E) <i>Sealed Radioactive Sources – Classification</i>¹, or equivalent; and (b) satisfy the 'special form' design and test requirements specified in the <i>Code of Practice for the Safe Transport of Radioactive Substances 1990</i>² issued under the <i>Environmental Protection (Nuclear Codes) Act 1978</i> (Cwlth), or equivalent.
2	Radiation source fixed in sealed source apparatus	The radioactive substance must be fixed and locked in the sealed source apparatus in such a manner to prevent loss, dislodgment or removal of the source by unauthorised person.
3	Positively located	The radioactive substance must be positively located in the sealed source apparatus to allow "hands off" attachment and detachment of spacers and/or tool.
Radiation dose rate		
4	Radiation dose rate	When the radioactive substances are locked in the sealed source apparatus, the radiation dose rates must not exceed: <ul style="list-style-type: none"> (a) 2000μSv in one hour at any point 5 centimetres from the external surface of the sealed source apparatus; and (b) 100μSv in one hour at any point 1 metre from the external surface of the sealed source apparatus.
Warning signs		
5	Radiation warning signs	The sealed source apparatus must be durably and legibly marked with a metal label, or labels, incorporating: <ul style="list-style-type: none"> • the radiation warning sign (trefoil) • the word "caution" or "warning" • words to the general form of "radioactive material". <p>The trefoil and markings must be black on a yellow background.</p>

¹ The standard is available from Standards Australia, 232 St Pauls Terrace, Fortitude Valley, Brisbane.

² The document is available from Australian Government Publishing Service, City Plaza, corner Adelaide and George Streets, Brisbane.

Test	Compliance Test	Criteria for Passing the Test
6	Labels	<p>The sealed source apparatus must be durably and legibly marked with a metal label, or labels, incorporating the following information:</p> <ul style="list-style-type: none"> • name and address of the supplier or manufacturer • identification number of the container • the type of radioactive substance, its activity and the date of measurement of that activity • maximum radiation dose rate at 1 metre from the surface of the sealed source apparatus (with shutters closed) and the date the measurement was made • name, address and telephone number of the owner.
Shielding material		
7	Shielding material	<p>The sealed source apparatus must be constructed of fire resistant materials. If non-fire resistant material is used (eg. paraffin, wax, etc.), it must be enclosed in a fire resistant vessel which will prevent the loss of the shielding material in the event of fire.</p>
Tool		
8	Mechanism for attaching the radiation source holder to the tool	<p>The mechanism for attaching the sealed radioactive substance holder, or subassembly containing the sealed radioactive substance holder, to the tool must not result in the unintentional release of the tool.</p>

Appendix A

Documents

National Health and Medical Research Council. *Code of Practice for the safe use of sealed radioactive sources in borehole logging (1989)*. NHMRC Publication No. 28, 1989.