

Requirements to Continue Using Sources Past their Recommended Working Life

The recommended working life is the sealed radioactive substance manufacturer's recommendation for the period within which the sealed source may be used in the knowledge that its design specifications will continue to be guaranteed. The manufacturer determines this period based on many parameters, such as the toxicity of the source, the nominal activity, source construction, half-life, the environment in which it is used, operational experience, etc.

Sealed radioactive substances should be disposed of once they have reached the end of their recommended working life. However, for certain applications, it may be possible to continue using sealed radioactive substances beyond their recommended working life provided certain testing requirements are satisfied.

Where a recommended working life has not been assigned by the sealed source manufacturer, the following should be used:

- 15 years be assigned to Co60 sources (metallic form) and Cs137, Am241, Am241/Be, Ra226 sources if they are doubly encapsulated and in a stable physical and chemical form (e.g. ceramic)
- 10 years be assigned to Ni63 sources, provided that leakage test results are satisfactory
- 5 years be assigned to all other sources, unless the user can demonstrate to the satisfaction of the chief executive that it should be extended.

This Information Sheet details the criteria which must be satisfied to permit the continued use of certain sealed radioactive substances beyond their recommended working life.

Cs137 sources in industrial gauges, Co60 sources in industrial gauges and Co60 sources in industrial radiography equipment

The possession licensee must dispose of, re-encapsulate, or re-certify the radioactive substances at the end of their recommended working life.

Existing equipment which is still being used and which incorporates sealed radioactive substances which have reached the end of their recommended working life, may continue to be used provided the results of source leakage tests conducted every 6 months remain satisfactory. That is, the sources may remain in use, provided this criterion continues to be satisfied, until arrangements for their re-encapsulation, re-certification or relocation are made. This additional period should not exceed two years.

Leakage tests of the sources, or the part of the equipment closest to the source if the source is not able to be withdrawn, must be undertaken in accordance with ISO9978 *Radiation protection - Sealed radioactive sources - Leakage test methods*. The results of the leakage tests and the name of the organisation which performed the tests are to be kept and must be produced if requested by an officer of Radiation Health. Continued use of the sources may only proceed provided the results of source leakage tests conducted every 6 months remain satisfactory.

Sources in borehole logging equipment

The possession licensee must not permit the use of sources for borehole logging which have exceeded their recommended working life.

Radium sources

The use of sealed radium sources beyond their recommended working life is only permitted in certain circumstances. As these requests are considered on a case by case basis, please contact Radiation Health for further advice.

Am241/Be and Cs137 sources in portable moisture or density gauges

The possession licensee must dispose of, re-encapsulate, or re-certify the radioactive substances at the end of their recommended working life.

Portable moisture or density gauges which are still being used and which incorporate sealed radioactive substances which have reached the end of their recommended working life may continue to be used provided the results of source leakage tests conducted every 6 months remain satisfactory. That is, the radioactive substances may remain in use, provided this criterion continues to be satisfied, until arrangements for their re-encapsulation, re-certification or relocation are made. This additional period should not exceed two years.

Leakage tests of the sources, or the part of the equipment closest to the source if the source is not able to be withdrawn, must be undertaken in accordance with ISO9978 *Radiation protection - Sealed radioactive sources - Leakage test methods*. The results of the leakage tests and the name of the organisation which performed the tests are to be kept and must be produced if requested by an inspector. Continued use of the sources may only proceed provided the results of source leakage tests conducted every 6 months remain satisfactory.

Sealed radioactive sources used for research and non-medical purposes

Radioactive substances, other than Ra226, used for research and non-medical purposes may continue to be used beyond their recommended working life provided that the results of yearly leakage tests are satisfactory.

Leakage tests of the sources, or the part of the equipment closest to the source if the source is not able to be withdrawn, must be undertaken in accordance with ISO9978 *Radiation protection - Sealed radioactive sources - Leakage test methods*. The results of the leakage tests and the name of the organisation which performed the tests are to be kept and must be produced if requested by an inspector. Continued use of the sources may only proceed provided the results of source leakage tests conducted every 12 months remain satisfactory.

Lightly encapsulated sources in gas chromatographs and in-stream analysers containing alpha sources

The possession licensee must not permit the use of lightly encapsulated sources used in gas chromatography equipment or in-stream analysers (a particular type of industrial gauge) which have exceeded their recommended working life.

FURTHER INFORMATION

If you have any questions in relation to the recommended working life requirements, please contact:

Radiation Health Adviser
Radiation Health Unit

Phone: 07 3328 9987
Facsimile: 07 3328 9622
Email: radiation_health@health.qld.gov.au