
LEAK TEST PROCEDURES

As required by the Nuclear Substances and Radiation Devices Regulations (NSRDR, sec. 18), every Internal Radiation Permit Holder who possesses, uses or produces a sealed source containing 50 MBq or more of a nuclear substance (or a nuclear substance as shielding) is required to conduct leak tests, or have leak tests conducted by a CNSC licensed service provider:

Immediately:

- where the sealed source or shielding is used after being stored for 12 or more consecutive months, immediately before using it
- where an event that may have damaged the sealed source or shielding has occurred, immediately after the event

Every 6 months:

- where the sealed source or shielding is not located in a radiation device

Every 12 months:

- where the sealed source or shielding is located in a radiation device

Every 24 months:

- where the sealed source or shielding is being stored

Leak Test Detection Threshold

Leak testing must be conducted using instruments and procedures that enable detection of 200 Bq or less of the nuclear substance in the sealed source or shielding. The instrument used must have a known detector efficiency and a known minimum detection level for the nuclear substance contained in each sealed source or shielding to be leak tested.

Due to the calibration, testing and minimum detection levels verification requirements of instruments for each of the nuclear substances to be leak tested, it is recommended that a third party is mandated to perform leak tests.

If in the course of conducting a leak test on a sealed source or on shielding, detection of leakage of 200 Bq or more of a nuclear substance is discovered, the IRPH shall:

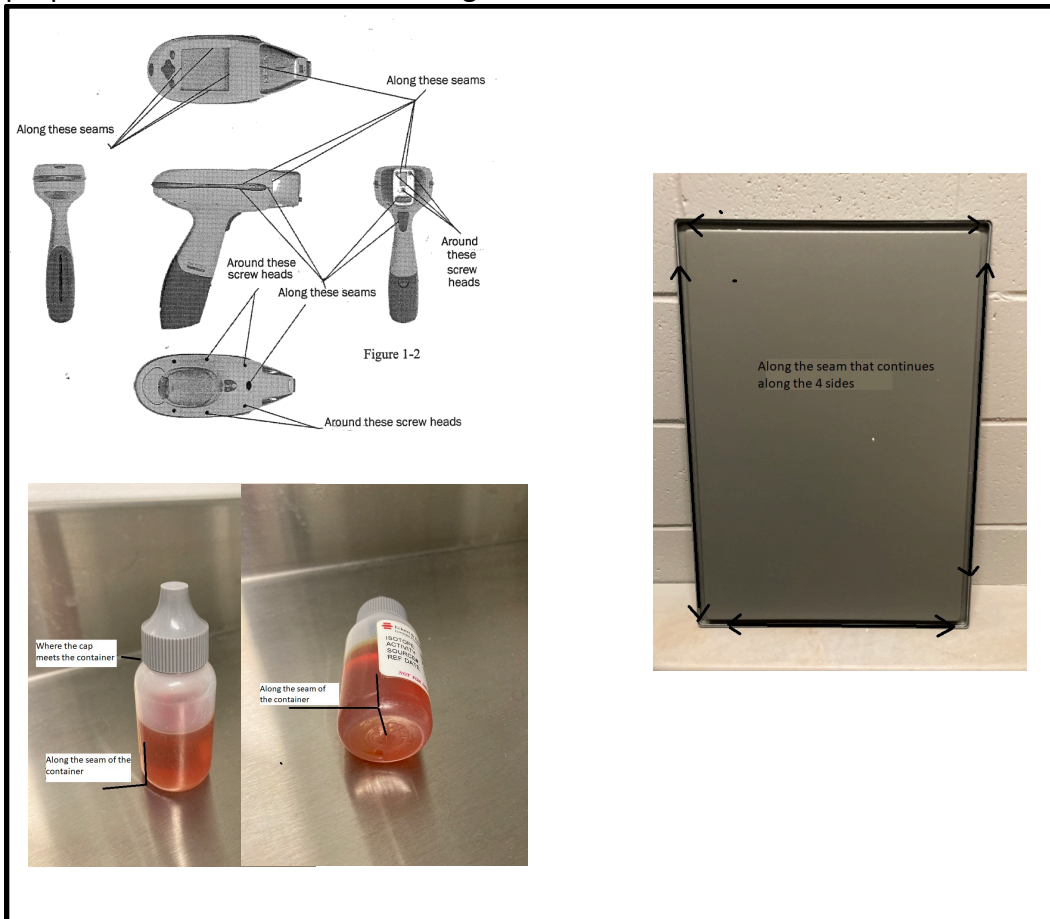
1. **Immediately inform the RSO;**
2. Discontinue using the sealed source or shielding;
3. Discontinue using the radiation device in which the sealed source or shielding is located or may have been located;
4. The RSO and/or the IRPH shall take measures to limit the spread of radioactive contamination from the sealed source or shielding;

The RSO is required to immediately notify the Canadian Nuclear Safety Commission that the leakage has been detected, and to communicate the actions taken.

Leak Test Wipe Methodology

Please refer to the documentation provided by the manufacturer or supplier of the radiation device, sealed source, or shielding device. In some instances, it is sufficient to collect a wipe sample from the outside of the device containing the sealed source, and in other instances the wipe sample must be taken from the sealed source itself. In all cases, the seams and joints of the sealed source or radiation devices are targeted for sampling. Depending on the methodology, both wet wipes and dry wipes may be required.

e.g. XRF Analyzer, dose calibrator source and flood source wipe locations for leak test purposes must include the following locations.



For additional information contact:
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