

SOP-4 PROCEDURES FOR LEAK TESTING SEALED SOURCES

Sealed source must be tested for leakage or contamination at intervals not to exceed six months. Records of leak test results on all sealed sources are maintained in Laboratory Services (LS).

Procedures for Leak Testing of Sealed Sources:

Personnel must wear a TLD ring and whole body badge when leak testing Disc, Wand, and Planchet Sources, as well as when testing the Troxler Neutron Moisture Gauge. Care and speed are essential when handling Sealed Sources.

1. Obtain wipes or swabs, Deionized water, small zippered plastic bags or scintillation vials, tweezers or grip tongs, protective gloves.
2. Label the outer cover of the cap of the scintillation vial with the UMRAC# before wiping the sealed source.
3. Dampen a smear or swab with two to four drops of deionized water.
 - a) For Sealed Sources - Wearing gloves, carefully remove the source from its container and quickly wipe the entire surface of the source with the dampened smear or swab. Whenever possible, use remote handling devices, such as grip tongs or tweezers to minimize exposure to the extremities. Return the source to its container and proper shielded position.
 - b) For Electron Capture Detectors - Rub the swab vigorously at the top of the detector cap, or, if the detector is installed in a machine, at the outlet tube.
4. Fold the wipe over and place in the plastic bag or place the wipe/swab in the labeled scintillation vial.
5. Use the counting system shown in Table 1 of this SOP for the specified radionuclide. The protocols for the system to be used are found in SOP-3, "Contamination Surveys. If a wipe was used, allow the smear to dry before counting.
6. Transfer all data to the individual sealed source Leak Test Record binder maintained in LS.
7. Evaluate the results of the leak test surveys. Any leak test that exceeds the limit of 0.005 microcuries is evidence that the source is leaking.
 - The leaking sealed source must be immediately withdrawn from use, decontaminated, repaired or disposed of as radioactive waste.
 - The Radiation Protection Specialist (RPS) will file a report with the State within five calendar days of the determination that the source is leaking.
8. All non-leaking sources will be returned to their storage locations.

Table 1

Counters and Standards for Leak Test of Sealed Sources

Radiation Emitted	Counting System	Standard
Beta <= 2.0 MeV	Liquid Scintillation Counter	Internal
Gamma, w/Auger or EC	Liquid Scintillation Counter	Internal
Gamma	Na (TI) I Detector	Ext. w/ same E
Alpha	Liquid Scintillation Counter	Internal
Alpha	Internal Proportional	Ext. w/ same E
X-ray	Liquid Scintillation Counter	Internal

Procedures for Leak Testing of the Troxler Neutron Moisture Gauges:

- Follow steps 1, 2, 3 and 3a above. Then,
 - Remove the top cover and the electronic assembly as described in the instrument manual.
 - After the electronic assembly has been placed beside the gauge, the source holder can be seen attached to the bottom of the gauge base.
 - The top of the source holder is covered with a yellow “Radioactive Material” label.
 - Wipe the visible edges of the yellow “Radioactive Material” label with the smear or a swab.
- Continue following steps 4 through 8 above