**Revision History**

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| **Author** | **Description of Change** | **Revision Date** |
| K. Graden | Editorial changes | 2/25/2016 |
| K. Graden | Changes include incorporation of ESH&Q Section procedure template, new numbering system, and editorial changes | 1/10/2017 |

The ESH&Q Section Source Technician and Source Technician Backup are responsible to conduct routine leak testing and inventory verification of sealed radioactive sources in source boxes and on loan (except sources that are installed in detector apparatus or otherwise inaccessible). Sealed radioactive sources are leak tested and inventoried routinely (usually monthly).

Sealed neutron sources located at Cave 1 of the Radiation Physics Calibration Facility (RPCF) are inventoried and leak tested routinely (usually monthly).

Radiation Physics sources in storage are leak tested and inventoried every 6 months.

Sealed radioactive source leak tests are performed using a cotton disk called a wipe. In most cases, leak testing consists of wiping the outside of a holder or capsule containing the source material. Alpha-emitting sources are very delicate and the foil surface of the source capsule can be easily torn or damaged by an ordinary cotton wipe. Therefore, care must be taken to wipe only the surface around the alpha-emitting source material or the holder containing the source capsule.

Inventory and Leak Testing Procedure:

1. Prepare 2 sets of wipes. One set is for alpha sources and one set is for beta-gamma sources.
2. Number the wipes in each set in sequential order. Alpha wipes should be designated with an “A” such as 1A, 2A, 3A, etc.
3. Obtain an up-to-date source inventory printout sorted by location from the Source Physicist, several blank Sealed Source Inventory Log sheets (R.P. Form # 67), and a master override key for source boxes.
4. Both a dosimetry badge and a TLD finger ring must be worn when leak testing radioactive sources.
5. The person conducting the leak testing must put on gloves when leak testing alpha sources.
6. Segregate the sources into 2 groups - alpha sources and beta-gamma sources.
7. Visually inspect each source for damage and improper labeling. If a source appears damaged, is improperly labeled, or if the metal tag connected to the source is damaged, collect the source and document this on the Sealed Source Access Log (R.P. form # 37).
8. Use a new wipe at each source storage location. Change wipes after leak testing about 5 beta-gamma sources.
9. Use a separate alpha wipe for each alpha source. Do not wipe the foil surface. Wipe the source holder.
10. Indicate whether the wipes being taken are for beta-gamma or alpha on the source inventory log. Record alpha source wipes on a separate source inventory log sheet.
11. Record the wipe number, source ID, and source location on the source inventory log. As applicable, draw an arrow under each location to indicate all other sources that are being leak tested and inventoried at that same location.
12. Check the box on the sealed source inventory log to indicate if a source is on loan, in Radiation Physics storage, or inventoried and not wiped because it is installed in detector apparatus or otherwise inaccessible.
13. Verify that area postings where sealed sources are used and stored are correct. All access points where sealed sources are used and stored must be posted with “Caution, Radioactive Material” and “Caution, Controlled Area.” Source boxes containing sealed sources must be labeled “Caution, Radioactive Materials.” Note whether or not postings are correct on the source inventory log.
14. Verify that sealed source storage locations, source boxes, and sealed source storage devices are adequate. Note this on the source inventory log.
15. The logger prints his/her initials in the last column of the source inventory log.
16. Upon completion of leak testing at each location, conduct a hand frisk and a field survey of wipes using a portable GM instrument with a thin window such as a Frisker or a Minimeter.
17. Remove and discard gloves.
18. Print and sign names at the bottom of the source inventory log.
19. Complete RAF Wipe Count Request Form (R.P. Form # 43) and turn in wipes for counting.