



# Module 9

## GENERAL RULES FOR Sealed Sources

# Fundamentals

- Sealed sources constitute a class of radioactive materials in which the radionuclides are compacted as high-integrity solids and then encapsulated into two successive and independently sealed capsules to prevent the escape of the central radiation source.
- Sealed Source capsules are designed to allow useful radiation to penetrate the walls, while containing the radioactive material.
- Source capsules, source housing or sealed source containing instruments are regularly tested to ensure the capsule is not compromised and releasing radioactive material (Leaking).

# Radiation Protection

- Although most sealed sources on campus have low radioactivity, they should not be held by the hand for long periods of time.
- Never place a sealed source on any body parts.
- Under no circumstances should the encapsulation of the source be broken. If a sealed is cracked or broken, report it right away to the Radiation Safety Office.
- Once you are finish using the source, place it in a locker or locked cabinet marked with “Caution-Radioactive Material” tape no matter how small the activity is.

# Regulations

- All sealed sources on campus are required to be inventoried by the Radiation Safety Office (even if the manufacturer says it is an exempt source).
- All sealed sources with an activity of at least 100  $\mu\text{Ci}$  are required to be leaked tested by the Radiation Safety Office on a semi-annual basis.
- Leak tests are designed to detect a minimal leakage of 0.005  $\mu\text{Ci}$  from the source.
- If it is discovered that a source is leaking above 0.005  $\mu\text{Ci}$ , it will be put out of service by the Radiation Safety Office.

# Regulations

- All users of sealed radioactive sources are required take the appropriate training by the Radiation Safety Office and pass the subsequent exam.
- The Radiation Safety Office will decide whether a whole-body badge or ring is required to use the sealed source depending on its hazards.
- PI's are required to do annual refresher training for radiation use/storage of sealed source with their personnel.
- Users of soil moisture density gauges are required abide by the above regulations and additional regulations that the Radiation Safety Office will go over with the PI.

# Regulations

- Laboratories that use sealed sources (no matter how small the activity) are required to have the proper posting for radiation use/storage.
- If the sealed source is located inside equipment (such as electron capture detectors or ECD's), the source shall never be removed from its housing.
- Sealed sources located inside liquid scintillation counters shall only be removed by the Radiation Safety Office prior to surplus.
- Remember, that under no circumstances, should the integrity of the sealed source be broken.

## Examples

