

026 Test: Wet Smear / Filter Test for Radioactive Contamination

1. Purpose:

- 1.1. To perform periodic testing to verify that no radioactive material has leaked from the double encapsulated sealed Source Tube Assemblies and to provide assurance that operators and the public are protected from Cs¹³⁷ radioactive contamination.

2. Forms

2.1. RADIATION SURVEY REPORT

3. References

- 3.1. 10-CFR-36, Part 59, (a) LICENSES AND RADIATION SAFETY
REQUIREMENTS FOR IRRADIATORS, Detection of
Leaking Sources
- 3.2. ANSI-N-433.1 (1977) Safe Design and Use of Self-Contained, Dry Source
Storage Gamma Irradiators

4. Equipment

- 4.1. Survey Meter A calibrated instrument that is sensitive enough to
detect 1 mR/hr gamma radiation

5. Procedure

- 5.1. Use a separate moistened (with distilled water) piece of filter paper for each location and thoroughly smear an area approximately 100 cm² (approximately 10 cm x 10 cm) in each of the following locations:
 - 5.1.1. Above the chamber door.
 - 5.1.2. Door shield / lower inner column interface
 - 5.1.3. Allow the test samples to dry.
- 5.2. Survey the Main Ventilation Exhaust Filter Housing area using the radiation survey meter:
 - 5.2.1. If < 1 mR/hr, proceed to the 5.3.
 - 5.2.2. If **≥ 1 mR/hr, proceed to 5.5.**
- 5.3. Turn off the MAIN VENTILATION BLOWER, open the GRAYèSTAR™ Main Ventilation Exhaust Filter Housing, replace the filter, and turn on the MAIN**

VENTILATION BLOWER.

- 5.3.1. Cut a 100 cm² (approximately 10 cm x 10 cm) area from the center of the used filter.
- 5.3.2. DO NOT dispose of the remainder of the filter removed from the GRAYèSTAR™: seal and store the remainder of the filter in the storage locker. (The filter will be disposed of in the proper manner after sample analysis.)
- 5.3.3. Label the samples with the GRAYèSTAR™ unit / serial number, sampling location, date, and sampler's signature; record the sample.
- 5.3.4. Use a survey meter and measure the samples for **\$ 1 mR/hr on contact**.
 - 5.3.4.1. **If < 1 mR/hr on contact, send the samples to a counting laboratory and proceed with the 5.4.**
 - 5.3.4.2. **If \$ 1 mR/hr on contact, proceed to step 5.5.1.**
- 5.4. **If no radioactivity (<1 mR/hr) on contact is detected, the GRAYèSTAR™ unit may continue in service: proceed with step 5.6.**
- 5.5. **If any radioactivity (\$1 mR/hr) on contact is detected:**
 - 5.5.1. **The GRAYèSTAR™ unit shall be removed from service.**
 - 5.5.2. Appropriate measures shall be taken to prevent exposure of personnel and further dispersal of radioactive material: e.g. the Main Ventilation Blower is turned off and secured, the Security Doors are closed and secured, etc.
 - 5.5.3. The GRAYèSTAR™ Owner shall be immediately notified of the test results and other pertinent data.
 - 5.5.4. The GRAYèSTAR™ Owner shall immediately notify the pertinent regulatory or controlling authority that an incident has occurred which might have caused or threatens to cause a radiation hazard.
 - 5.5.5. A detailed radiation survey will be performed to determine the extent of any radioactivity contamination
 - 5.5.6. **NO ONE SHALL ATTEMPT TO OPERATE, FURTHER EXAMINE, OR DECONTAMINATE THE UNIT WITHOUT EXPRESS CONSENT OF THE GRAYèSTAR™ OWNER OR AN AUTHORIZED REPRESENTATIVE OF THE PERTINENT REGULATORY OR CONTROLLING AUTHORITY.**
- 5.6. The RADIATION SURVEY REPORT shall be completed for all samples. Completed reports shall be distributed to: