
Radiological Inventory Control Policy and Requirements

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Radiological Inventory Control Policy and Requirements

1. PURPOSE

This document defines M&C administrative policies and requirements for establishing best management practices in support of transferring and managing radiological inventories in M&C facilities. There is an SBMS requirement to account for all radioactive material present in ORNL facilities. As such, there is a need to monitor, categorize, and account for radiological material entering, exiting, and stored in M&C facilities. This action goes beyond a physical inventory of identifying just the material type; it requires the accounting and tracking of the radionuclide in curies or grams.

2. SCOPE

This division policy applies to M&C personnel who perform work in M&C facilities (i.e., laboratories, offices, etc.) and the transfer or storage of activated material. Radiological material beyond the scope of this document would be registered sources, surface contaminated material, commercially available products with internal sources (e.g., smoke detectors, etc.), and in keeping with the Nonreactor Nuclear Facilities Division Inventory Control Program radionuclide less than 0.001 curies (1 mCi) are not accountable; however, they should be reported (documented). Special Nuclear Material (SNM), at a minimum, will be monitored and controlled using ORNL Nuclear Material Control & Accounting Procedure ORNL/CF-92/202.

3. ENVIRONMENTAL, SAFETY, AND HEALTH CONCERNS

Some work performed in M&C facilities has the potential for causing and/or resulting in personnel contamination or exposure, spreading of contamination, environmental release of contaminated materials, exceeding designated facility limits, or damage to the facility or associated equipment.

4. REFERENCES

ORNL SBMS Subject Area
<http://sbms.ornl.gov/sbms/SBMSearch/subjarea/safbasis/pro1.cfm>

5. RESPONSIBILITIES

- 5.1 **Complex Facility Manager** - is responsible to ensure facility radiological inventories are determined and documented with a copy of the documentation sent to Nuclear Facility Safety Services.
- 5.2 **M&C ESH Nuclear Material Management Representative** – is responsible for monitoring and tracking radiological inventories to ensure facility limits are not exceeded.

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5.3 **Lab Space Manager (LSM)** - is responsible for controlling and tracking radiological material in/out of their assigned space.

5.4 **STAFF PERSONNEL** - are responsible for contacting and obtaining permission from LSM and the M&C ESH contact, prior to accepting or transferring radiological material. Additionally, with concurrence from the LSM, coordinate the transfer or receipt of radiological material with the local Radiological Control Technician.

6. POLICY RULES

6.1 GENERAL ADMINISTRATIVE REQUIREMENTS

- 6.1.1 Operational activities are to be conducted in a safe and compliant manner.
- 6.1.2 Operating personnel should be trained and competent in their assigned duties.
- 6.1.3. ORNL established radiological practices and procedures are to be followed to ensure that radiological work controls, personnel monitoring, and radiological limits are implemented.
- 6.1.4. As-Low-As-Reasonably-Achievable (ALARA) measures should be followed to minimize personal radiation exposure.
- 6.1.5 Radioactive material may not be accepted or transferred into M&C facilities without documentation of isotopic values in curies or grams.
- 6.1.6 A physical life plan should be assigned to the material summarizing the material's expected time line and location of R&D and storage until the material is transferred out of the Division or sent to waste.
- 6.1.7 The principle radioisotopes of activated material, whose activity is equal to or greater than 1 mCi, shall be documented and recorded for inventory purposes. SNM material will follow the minimum accounting and reportable quantity requirements identified in ORNL NMC&A procedure ORNL/CF-92/202.

6.2 MATERIAL IDENTIFICATION

- 6.2.1 All material (specimen, samples, etc.) shall have an identification associated with it for tracking, monitoring, and documentation purposes.

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- 6.2.2 All material, at a minimum, shall have its principle radionuclide identified with its abundance. That is, any isotope equal to or greater than 1 mCi is to be tracked and monitored.
- 6.2.3 If grams are used, the associated curie value for the nuclide should be calculated to determine necessary management controls.
- 6.2.4 Values less than 1 mCi should be rounded up or down to determine report ability (e.g., 0.0005 rounded to 0.001 thus reportable, 0.0004 rounded to 0.0001 thus not reportable).
- 6.2.5 All material will have an assigned responsible person (no orphan material allowed).
- 6.2.6 Additional information such as material activity date (for monitoring half-life), material transfer date, and storage location (Building, Room), should be documented.

6.3 MATERIAL STORAGE

- 6.3.1 Storage time in non- nuclear facilities should be kept to a minimum. Long-term storage is not acceptable (months).
- 6.3.2 In keeping with ALARA, no large accumulation of material should be allowed such that background activities are adversely affected.
- 6.3.3 While a large accumulation of material may be acceptable from an ALARA perspective, it may not be permissible from a physical standpoint. Physical storage areas capacity should not be exceeded and should be kept orderly and neat.

6.4 MATERIAL CONTROL

- 6.4.1 Radioactive material for which there is no approved Research Safety Summary (RSS) will not be accepted.
- 6.4.2 All radioactive material must be accompanied with the prescribed identification and physical life plan as outlined in this policy prior to acceptance or transfer to M&C facilities.
- 6.4.3 To ensure necessary radiological controls are in place, inform the local Radiological Control Technician of planned transfers or receipts of radiological material.
- 6.4.4 All radioactive material is to be inventoried and logged when received.

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- 6.4.5 LSM will maintain an auditable inventory log showing the prescribed material identification and the current inventory status.
- 6.4.6 A threshold value of **60 mrem/h @ 30 cm** for material work in a radiation area is to be followed.
- 6.4.7 Material exceeding this threshold value for a radiation area should not be processed. Material should be placed in proper containment and returned or placed in an acceptable storage area for proper disposition.
- 6.4.8 Facility total radiological inventory values should not exceed 10% of Category 3 Non-reactor Nuclear Facility inventories as described in DOE-STD-1097-92.
- 6.4.9 The M&C ESH Nuclear Materials Management representative will monitor and track a facility inventory.

7. RECORDS

- 6.1 Associated staff will provide the necessary radionuclide and material identification.
- 6.2 The Appendix A Radiological Material Inventory Data Work Sheet or similar material data sheet should be used to document proposed receipt of radiological material into M&C Division facilities.
- 6.3 LSM will maintain an inventory log to track and reflect a current area inventory balance.
- 6.4 The M&C ESH Nuclear Materials Management representative will maintain an inventory log to track and reflect a current facility inventory.

