A. Purpose:

Work surfaces, areas and personnel should be monitored when working with radioactive materials (RAM) in clinical settings such as Nuclear Medicine, Nuclear Cardiology or the PET Center. Methodical surveys are necessary to detect, identify, and remove unwanted contamination.

B. Applicability/scope:

This policy applies to all clinical areas where unsealed sources of radioactive materials are used, administered, stored, or held for in storage. It applies to any and all laboratories, spaces or facilities under the jurisdiction of the Columbia University Radiation Safety Office.

C. Definitions

- DPM – disintegrations per minute
- GM – Geiger Mueller
- RAM – radioactive material.

D. Procedures

There are three (3) types of routine surveys:

1. Ambient Radiation Survey

An ambient radiation survey is required when unsealed sources of gamma-emitting radionuclides are used for diagnostic or therapeutic procedures. A survey must be performed with a suitable survey instrument. Individuals processing unsealed sources of radioactive material in a clinical setting must perform ambient radiation surveys every day. The areas to be surveyed are customized to each department but must include work areas where radioactive material is received, processed, administered to patients and disposed. Before starting the ambient survey, individuals must ensure the batteries of the survey instrument are sufficiently charged. The individual must also ensure the survey instrument is properly detecting radiation by surveying a sealed check source – typically a small source of Cs-137.

2. Survey for Surface Contamination

Work areas, including bench tops, cabinets, storage areas, floors, etc. must be surveyed for contamination daily or when RAM is used. Surveys should be performed with meters appropriate to the types of radionuclides used in the area.
Surveys should also include areas that individuals are likely to touch with their hands – i.e. telephones, keyboards, doorknobs. Individuals must also perform a survey of their hands, feet and clothing during and after use of RAM.

3. Survey for Removable Contamination (wipe test)

A wipe test survey is performed by swabbing a potentially contaminated surface with a media capable of absorbing radioactivity. “Q-tips”, alcohol swabs and filter paper are all suitable media for a wipe test survey. Wipe surveys are appropriate for all types of RAM but are particularly useful for isotopes that emit low energy radiation that may not be detected by GM or NaI(Tl) detectors, such as H-3, C-14, S-35 or Fe-55.

Individuals processing unsealed sources of radioactive material must perform wipe tests at daily or when RAM is used. The areas to be wiped are customized to each department but must include work areas where radioactive material is received, processed, administered to patients, and disposed. Surveys should also include areas individuals are likely to touch with their hands – i.e. telephones, keyboards, and doorknobs. The individual performing a wipe test should swab an area equivalent to the palm of the hand.

Once collected, the wipes must be counted in a detection system capable of detecting radioactivity at levels below 200 DPM (approximately 0.1 nanocurie.) A sodium iodide well counter or liquid scintillation counter typically offers an appropriate level of sensitivity. A Geiger-Mueller counter is NOT sufficiently sensitive to analyze wipe tests. The results of wipe tests must be documented and available for review by Radiation Safety.

E. Responsibilities

1. Laboratory/facility/area supervisor: ensure that surveys are conducted as outlined above. Ensure records are maintained for at least three years.

2. Radiation Safety: monitor for compliance with this policy.

F. Emergency contact

Radiation Safety: CUMC 212-305-0303

G. Medical Surveillance: N/A

H. Recordkeeping

Records of surveys should be kept for three (3) years.

I. Appendices: N/A
J. Forms: N/A

K. References: N/A

L. Acknowledgements N/A