

University of Maryland Baltimore

Radiation Safety Procedure

Procedure Number: 3.3

Title: Clearance of Areas, Individuals, Materials, and Equipment

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Technical Review and Approval:

_____ **Date:** _____
Radiation Safety Officer

Radiation Safety Committee Approval:

_____ **Date:** _____
Chair, Radiation Safety Committee

PROCEDURE 3.3 – CLEARANCE OF AREAS, INDIVIDUALS, MATERIALS, AND EQUIPMENT

1.0 Purpose:

This procedure establishes requirements for releasing areas, individuals, materials, and equipment from radiological controls. This procedure addresses identification of areas, materials, and equipment that are candidates for release, radiological monitoring necessary prior to release and required documentation.

2.0 Scope:

This procedure is applicable to all areas, individuals, materials, and equipment that are located in UMB facilities or affected by UMB radiological work activities such that the potential exists for contamination with radioactive material. This procedure addresses solid surfaces only, and is not applicable to release of liquids or granular solids.

This procedure is not applicable to the release of individuals (patients) who have received diagnostic or therapeutic radiopharmaceutical treatments or radioactive implants. These individuals are released in accordance with UMB patient care directives.

3.0 Procedure:

3.1. *Identification of Areas, Individuals, Material, and Equipment That Are Candidates for Release*

3.1.1. All areas, individuals, materials, and equipment that have the potential to be contaminated with radioactive material due to the nature of their use or storage should be considered contaminated until adequate radiological monitoring proves otherwise. This includes:

- Areas, material and equipment, such as fume hoods and lab surfaces, that are exposed to removable surface contamination from unsealed radioactive sources;
- Areas, material and equipment that are exposed to unsealed radioactive material administered to medical patients;
- Waste and other materials removed from these areas;
- Any area, material, or equipment bearing radioactive material labels;
- Individuals who work in the vicinity of the areas, materials, and equipment listed above; and
- Radioactive material shipping containers.

3.1.2. The identified areas, individuals, materials, and equipment should be considered candidates for release if:

- The area, individual, material, or equipment is no longer required for use involving radioactive material;
- There are no surfaces that are likely to be contaminated that are inaccessible for monitoring efforts;
- The radioactive contamination levels are likely to be below the release criteria or, if the radioactive contamination levels exceed the release criteria, decontamination efforts are likely to be successful.

3.2. *Conduct of Monitoring Prior to Release*

3.2.1. Prior to releasing any area, individual, material, or equipment from radiological controls, all accessible surfaces that may have come into contact with radioactive material shall be monitored for both removable and fixed radioactive contamination. For areas, materials, and equipment, this will generally include both a smear survey and a direct frisk. However, if the instrument and techniques used to perform the direct frisk have sufficient sensitivity to detect contamination at the removable contamination release criteria established by this procedure, then no smear survey is necessary. Likewise, individuals and their personal effects (skin, clothing, pens, dosimeters, notebooks) should normally be subject to a direct frisk only.

3.2.2. The monitoring techniques used shall be capable of detecting radioactive contamination at or below the applicable release criteria established in this procedure.

3.2.3. For inaccessible surfaces, an evaluation shall be performed to determine the likelihood that the surface is contaminated at levels exceeding the release criteria. If contamination of the inaccessible surfaces is determined to be likely, the area, material, or equipment shall not be released until it has been disassembled to the extent necessary to allow for appropriate monitoring.

3.2.4. Prior to release, all radiological hazard markings, labels, and postings shall be removed or permanently defaced.

3.3. *Release Criteria*

3.3.1. Prior to release from radiological controls, the surface contamination levels on the candidate individual, area, material, or equipment shall be

reduced to levels that are ALARA and less than those provided in Table 1.

Table 1

Radionuclide	Contamination Level (dpm/100 cm ²)		
	Average ¹	Maximum	Removable
I-125, I-129, Transuranics	100	300	20
I-126, I-131, I-133, Sr-90	1,000	3,000	200
Beta-gamma emitters other than those listed above	5,000	15,000	1,000

Note 1: Contamination levels shall not be averaged over an area exceeding one square meter.

3.3.2. Should it be determined that the contamination levels on an individual's skin cannot be reduced to levels less than the applicable value(s) provided in Table 1 despite repeated decontamination efforts, the RSO shall make a determination regarding release of the individual and necessary follow-up activities (e.g., chemical decontamination, excision, bioassay, etc.).

4.0 Records and Reports:

4.1. Records

4.1.1 The individual performing the monitoring necessary to support the release decision shall maintain survey records indicating the following:

- Description of the area, material, or equipment;
- Date and time monitoring was performed;
- For smear surveys, monitoring results in units of dpm per unit area or smear; and
- For direct monitoring, monitoring results in units of dpm per detector area.

4.1.2. No records are required for routine contamination monitoring of individuals and their personal effects. Records shall be created and maintained for monitoring associated personnel decontamination efforts.

4.2. *Reports*

None.

5.0 References:

COMAR 26.12.01.01

USNRC Regulatory Guide 1.86

USNRC Consolidated Guidance About Materials Licenses: Program Specific
Guidance About Medical-Use Licenses

UMB Radiation Safety Program