

WIPE TEST SURVEY
UPDATED: JANUARY 2014

CPT CODE: N/A

Purpose: The purpose of this protocol is to confirm the absence of any removable radioactive contamination within the Nuclear Medicine/PET department. This is done in accordance of Appendix R of WISREG-1556, Volume 9, Revision 2. This is also in accordance of UW Radiation Safety Procedures.

Types of Areas: Types of Areas are defined in Wisconsin Department of Health Services chapter 157.03.

- A. "Radiation Area means an area, accessible to individuals, in which radiation levels could result in an individual receiving in excess of 5 mRem in 1 hour at 30 cm. from the radiation source or from any surface that the radiation penetrates."
 - 1. Examples: Radiopharmacy E1/378 or inpatient therapy rooms.
- B. "Restricted Area means an area to which access is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials."
 - 1. Restricted areas must be locked and/or access restricted by a radiation worker present in the room. Only trained radiation workers may enter a restricted area.
 - 2. Within the UW Hospital Nuclear Medicine Service, the radiopharmacy (E1/378) is the only room considered a "restricted area" and "radiation area".
 - 3. Examples: E1/385, Radiopharmacy (E1/378), inpatient therapy rooms.
- C. "Controlled Area means an area, outside of a restricted area but inside the site boundary, access to which can be limited by the licensee for any reason."
 - 1. The wet lab (E1/381), Injection room (E1/367), uptake room (E1/369), and all imaging rooms (E1/385, E1/387, E1/392, E1/394, E1/396) have been designated as "controlled areas".
 - 2. In controlled or unrestricted areas, unauthorized removal or access to radioactive materials must be prevented by the licensee, but the area does not need to be locked unless unattended radioactive materials are present and/or the RAM is not under the constant surveillance and control of a trained radiation worker.
 - 3. Members of the general public may enter controlled areas if their exposure is limited to 2 mRem/hr and 100 mRem/year.
- D. "Unrestricted Area means an area to which access is neither limited nor controlled by the licensee"
 - 1. Exposure in unrestricted areas are also limited to 2 mRem/hr and 100 mRem/year
 - 2. The inpatient therapy rooms are radiation areas and restricted areas while the treated patients are present but must meet the criteria for unrestricted areas when the room is released for use.
 - 3. Unrestricted Areas are not routinely wiped for contamination.
 - 4. Examples: Inpatient therapy rooms when not restricted, waiting rooms, offices.

Action Levels: Action Levels for Removable Surface Contamination

- A. 1st Action Level- 200 dpm/100 sq. cm.
- B. 2nd Action Level
 - 1. Based on which radionuclide the area was contaminated with use the following criteria for the 2nd action level:
 - 2. 2nd Action Level- Appendix R of WISREG-1556, Volume 9, Revision 2

| | | |
|--------------------|-----------------------------------|-----------------------|
| | I-131, I-125 or I-123 | Tc-99m, Tl-201, Ga-67 |
| | <u>In-111, P-32, Sr-89, Sm153</u> | <u>Cr-51, Co-57</u> |
| Unrestricted Areas | 200 dpm/100 sq cm | 1000 dpm/100 sq cm |
| Restricted Areas | 2000 dpm/100 sq cm | 20000 dpm/100 sq cm |

3. 2nd Action Level- UW Radiation Safety Manual, Table 7-4
All Radionuclides used in Nuclear Medicine and PET
Controlled Areas 660 dpm/100 sq cm

Procedure:

Read and follow the general procedure for wipe testing found in Appendix R of WISREG-1556, Volume 9, Revision 2 and the UW Radiation Safety Manual, Part 7.7.b
(<http://www.ehs.wisc.edu/rad/RadiationSafetyForRadiationWorkersTrainingManual.pdf>)

Areas to be wiped are on the maps in each room or in the protocol book under Radiation Safety. Each wipe should be 100 cm².

Each tube in the wipe test trays are labeled with the room and area.

Tray #30(Protocol Background) with one empty test tube should always precede the wipe trays on all wipes. This is done to make sure an accurate background subtraction is calculated.

Make sure the 4 trays are in order for the Nuclear Medicine wipes. (Each tray has a number on it, 1-4) (PET wipes only use one tray.)

Nuclear Medicine wipes are counted in the Auto Gamma Counter on Protocol #2

Window A 30-1000 keV

Window B 15-255 keV

Window C 255-1000 keV

1 minute count per sample

Automatic background subtract

Background Subtraction = Prot. Bkg.

CPM multiplier = 1/ (efficiency%/100)

PET wipes are counted in the Auto Gamma Counter on Protocol #7

Window A 30-1000 keV

Window B 30-400 keV

Window C 409-613 keV (20% window for 511 keV)

1 minute count per sample

Automatic background subtract

Background Subtraction = Prot. Bkg.

CPM multiplier = 1/ (efficiency%/100)

The CPM multiplier is the efficiency multiplier. It is used to convert cpm to dpm. It is based off the efficiency equation of (cpm/dpm) x100=% efficiency. We perform the efficiency check quarterly with a Ba-133 source. Ba-133 efficiency is usually one of the lower efficiencies that can be calculated with a known source of radioactivity. Since the other radionuclides used have lower energies and higher efficiencies, using this factor is a worst case scenario. When the identity of the contaminating radionuclide is known, a more precise determination of efficiency may be calculated using one of the NIST-traceable sources with a similar energy as the contaminant and appropriate energy windows.

Review the printout which will give results in net dpm (CCPM).

1. If net dpm with any wipe is higher than 200 dpm then repeatedly decontaminate the area until the wipe is <200 dpm/100 sq cm if possible.
2. Enter wipe results in Nuclear Medicine Information System (NMIS).
3. Open NMIS---Health Physics---Area Surveys/Wipes---Area Wipe
Frequency should be weekly, and group should be WEEKLY WIPES (NUCLEAR MEDICINE) or PET WEEKLY WIPES (PET).
Background is already subtracted by the Auto Gamma Counter so it does not need to be entered.
Enter results in order from the printout. (Printout does not have areas listed but are in order with NMIS entries. This is based on properly placing the trays into the Auto-Gamma Counter for the wipe test counts.) (PET printout is also in order with NMIS entries)

Click OK.

If repeat wipes still exceed 200 dpm/100 sq cm

1. The Nuclear Medicine Manager will determine which action level is applicable depending on the area and/or radionuclide involved according to the criteria above for 2nd action level.
2. The identity of the radionuclide must be determined. Acquire a spectrum on the hot wipe in the Captus 3000 Well counter with the Multi Channel Analyzer to identify the radionuclide by energy and consult the appropriate table for 2nd action level.

If the second action levels are exceeded and repeated decontamination does not succeed, notify the Manager in addition to the UWHC Radiation Health Physicist or Radiation Safety Officer who will assist in managing the contamination.

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