

**VIDANT MEDICAL CENTER
RADIOLOGY SERVICES – POLICY**

MANUAL: Radiology Services	SUBJECT: Radiation Protection Garments – Acquisition, Care/Maintenance, Inspection and Disposal
PAGE: Page 1 of 5	EFFECTIVE DATE: 10/8/10
PREPARED BY: Jerry Hightower, MS Christina Jackson, CRA, BS David A. Rushing, MSPH Jesse L. Bendle, BS, CNMT	REVIEWED: 10/4/10, 2/21/12 REVISED: 5/30/12 REVISED:
APPROVED BY: Brian S. Kuszyk, MD (Chairman)	Sandra J. Sackrison, BS, MHA (Administrator)

PURPOSE: The purpose of this policy is to establish a method of defining, monitoring, assessing and communicating the results of lead PPE inventory and annual quality assurance to management, Vidant Medical Center (hereafter, VMC) Radiation Safety Committee, and individuals subject to this policy.

APPLICABILITY: The following policy is applicable to all departments whose employees wear radiation protection garments. The policy is also applicable to off-site facilities at: Patient Testing Center, Vidant SurgiCenter, Firetower Medical Clinic, Vidant Pain Management Center, Minor Emergency Department, and the Golden Living Center.

LIMITATIONS: This policy specifies an annual requirement for testing and inventory. Areas may chose to conduct testing and inventories more frequently; however, the provisions of this policy shall be followed.

POLICY:

I. REGULATORY REQUIREMENTS:

A. WHOLE BODY SHIELDING

- a. The lead equivalency requirement increases to 0.5 mm for any part of the body that is exposed to the useful x-ray beam (direct beam).
- b. The “North Carolina Regulations for Protection Against Radiation” require that professional staff and ancillary personnel shall be protected from direct scatter radiation by whole body protective garments or whole body protective barriers with a lead equivalency of at least 0.25 mm. Therefore, all personnel who are involved in an x-ray procedure, and cannot be behind a permanent protective barrier during the x-ray exposure, must wear a protective garment.

B. GONADAL SHIELDING

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- a. VMC requires no less than 0.5mm lead equivalent shall be used for potentially procreative patients during radiographic procedures in which the gonads are in the direct or useful beam. (Except for cases in which this would interfere with the diagnostic procedures.)

C. HUMAN HOLDERS

- a. If a human holder is required, the human holder shall be protected with lead PPE to lessen exposure from scatter radiation.

D. MECHANICAL HOLDERS

- a. When a patient or film must be provided with auxiliary support during a radiographic exposure. Mechanical holding devices shall be used whenever medical circumstances permit.

III. INVENTORY AND INSPECTION

A. INVENTORY

- a. The Radiology Services Administrator, VMC Radiation Safety Officer, or VMC Medical Physicist, shall approve all acquisitions (Purchase Order Requests) of radiation protection garments at VMC. The Purchase Order Request must specify whether the item is "LEAD-FREE" or not.
- b. The vendor must provide a certificate of the lead equivalency (Note: It may be attached to the garment).
- c. All lead protective garments will be purchased and delivered to Radiation Safety for initial inspections and inventory.
- d. Each lead PPE will have its own unique inventory barcode number that will identify the department and/or modality to which the PPE is assigned as well as a consistent number to ensure accurate tracing.
- e. Inventory numbers are assigned upon delivery of newly purchased PPE and placed into the database.
- f. The inventory barcode number will be permanently adhered to the lead PPE by an adhesive and a grommet.
- g. A different color zip tie correlating to a certain year will be placed through the grommet for a visual flag as to when the PPE annual inspection is due.

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- h. The inventory for all lead PPE is in a central database on a laptop that resides in the Radiation Safety Office until annual assessments are due.
- i. This database is password protected and under the management of the Radiation Safety Office.
- j. Designated individuals from each department, and their assigned back-up, have access to the inventory database when performing the annual testing.

B. INSPECTION

- a. After inventory and initial inspection all lead aprons/ shields will be inspected on an annual basis to ensure integrity of the item and protective qualities are intact.
- b. Each department is responsible for the daily maintenance of their assigned lead PPEs and spot checks to ensure all devices are properly labeled and in the proper locations.
- c. Lead aprons should never be folded. Cracks in the lead lining can develop at the fold, reducing the life of the PPE.
- d. Designated individuals from each department are responsible for the annual inspection.
- e. The condition of each apron shall be evaluated to ensure the device is not damaged to impair usefulness (i.e. Velcro failing, tearing of exterior covering/material, and folding of lead within apron).
- f. Lay out the item on a fluoroscopy table.
- g. Examine the entire item using the fluoroscope.
 - i. Pinholes on an apron are marked with tape. If two to three holes are present on the lateral side, the apron is acceptable to use.
 - ii. If pinholes are present over the breast, reproductive area, or over the thyroid area on a thyroid shield, a recommendation for replacement is made.
 - iii. Any device that has tears or cracks is removed from service, except for minor cracks or tears along the periphery.
- h. Find the PPE in the database and record results.
- i. Cut the current zip tie and replace it with the new year's color zip tie.

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- j. Lead aprons suspect of damage will be returned to the Radiation Safety Office for proper disposal.
- k. The Radiation Safety Office will provide support for personnel who are assigned testing duties. This support will include guidance for testing methods and decisions about failures.

C. STORAGE

- a. The manufacturer's recommendations regarding the handling and storage of protective clothing must be strictly observed.
- b. All affected areas must have apron racks. Radiation protection garments and shields should be hung properly on these racks when not in use.
- c. Lead PPE's should not be folded or draped across sharp corners or chairs, or on the floor.
- d. The thyroid collar can be attached to the apron or draped properly on the racks and not left in a fashion that will cause the material inside to break.
- e. It is the responsibility of all radiation protection garment users to practice proper handling and storage of protective garments.

D. DISPOSAL

- a. The Radiation Safety Office is responsible for coordinating the disposal/recycling of radiation protection garments and thyroid shields when they need to be removed from service.
- b. The costs of disposal/recycling shall be the responsibility of the department that owns the radiation protection device.
- c. Items pulled from service to be disposed shall be marked as "DO NOT USE – DISPOSE" (or equivalent wording) and then brought to the Radiation Safety for storage prior to disposal/recycling.

NOTE: When purchasing new radiation protection garments for old, the purchaser should work with the supplier to dispose of the old radiation protection garments. In general, the suppliers will dispose/recycle radiation protection garments one-for-one (i.e. buy one, dispose of one).

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E. CLEANING

- a. It will be the responsibility of each department to clean radiation protection Garments when soiled. The suggested method of cleaning is to use a mild detergent, without bleach, do not soak or drench, wipe clean, and hang properly to dry.

F. RECORDKEEPING

- a. The Radiation Safety Office shall be the central repository of documentation relating to the commissioning, annual surveys, and disposal of radiation protection garments at VMC; however, it shall be each department's responsibility to ensure that all paperwork (e.g. surveys) is forwarded to the Radiation Safety Office. Records will be maintained for three years.

PERSONNEL DOSIMETRY

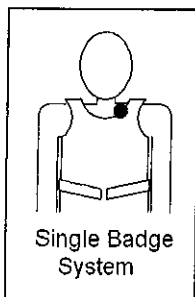
Fact Sheet



KEY RULES – FEDERAL, STATE AND INSTITUTIONAL:

1. Wear your dosimeter, only.
2. Wear your dosimeter properly (see below).
3. If a dosimeter is provided to you for monitoring your exposure, you must wear it, just like your ID badge. It is part of the uniform policy.
4. Dosimetry is to be left at a designated storage location in your area. Do not take it home. Do not leave it in your locker.
5. If you lose your dosimeter, notify Radiation Safety immediately for a replacement. Note: You will have 120-days from the end of the wear period to locate and return the lost dosimeter to Radiation Safety or be charged (e.g. payroll deduction) for the loss.
6. Notify Radiation Safety if you are monitored at another facility.
7. Intentionally exposing your dosimeter or otherwise falsifying your exposure is illegal.

PROPER USE OF DOSIMETRY:



The whole body dosimeter (or badge) is worn on the body where it will most uniformly measure radiation exposure to the head and torso of the wearer. Generally, whole body badges are worn at the waist, breast pocket or collar. When a protective apron is worn, the badge should be worn outside the apron,

generally at the collar.

If a declared pregnant worker (DPW) is assigned a fetal dosimeter, it must be worn at the waist. If a protective apron is required to be worn, the fetal dosimeter must be underneath the apron.

Ring dosimeters, when assigned, shall be worn on the dominant hand. When protective gloves are worn, the dosimeter should be covered by the glove.

MONITORING OF DOSIMETRY RESULTS:

The Radiation Safety Office reviews all dosimetry results to ensure they are in compliance with regulatory

standards. Further, it is the expectation of the Radiation Safety Committee that all doses be maintained "as low as reasonably achievable." To meet this expectation, the Radiation Safety Office has established trigger levels which spark inquiries and investigations when radiation doses become elevated. The triggers for occupationally exposed adults are as follows:

Exposed Region	Annual Limit (mrem)	ALARA 1 (mrem)	ALARA 2 (mrem)
Body	5,000	>200	>400
Extremity	50,000	>2,000	>5,000
Skin	50,000	>2,000	>5,000
Eye	15,000	>750	>2,000
DPW	500*	>30	>40

*DPW limit is per gestational cycle.

If the Radiation Safety Office does not contact you regarding your radiation dose, then you are within ALARA limits. But if you would like to see what your dose is periodically, coordinate a meeting with Radiation Safety or go to the Mirion website via: <https://www.dosimetry.com/myaccount/register.html>, register, follow the instructions and get your history. Additionally, if you are monitored, you will receive a radiation dose summary annually through your manager.

WAYS TO STAY SAFE OR REDUCE YOUR EXPOSURE:

1. If you don't need to be near a source of radiation, don't! Leave the area if not needed.
2. Reduce time near a source, reduce your exposure.
3. Increase distance from source, reduce exposure.
4. Utilizing protective aprons and standing behind mobile shields will reduce exposure.
5. Additional Radiation Safety Information can be found on the Vidant LearnCenter: "Radiation Safety for Radiation Workers"

VMC RADIATION SAFETY OFFICE CONTACT LIST:

- Jerry Hightower, Ext. 7-5140
- David Rushing, Ext. 7-3851
- Jesse Giles, Ext. 7-7242