

NUMBER: 11.4.28**DATE: 10/05/2011****REVISION:****PAGE: 1 of 4****SECTION: CAMPUS OPERATIONS****AREA: GENERAL AND OCCUPATIONAL SAFETY****SUBJECT: RADIATION PROTECTION DEVICES – INVENTORY AND INSPECTION****PURPOSE**

This procedure outlines the process for the inventory and inspection of radiation protection devices (aprons, shields, gloves) at UAMS.

SCOPE

UAMS employees and students, as well as other authorized persons working in unshielded areas where radiography is being conducted.

POLICY

UAMS will comply with state regulations and Joint Commission standards regarding the use and inspection of radiation protection devices.

Some key excerpts from current regulations:

- 1) State regulations require that all persons working in fluoroscopy be protected from direct scatter radiation by protection aprons or whole body protection barriers of not less than 0.25 millimeter radiation equivalent. In addition all individuals shall be positioned such that no part of the body will be struck by the useful beam unless protected by 0.5 millimeter radiation equivalent. ([RH-1602.a.5.](#))
- 2) A sufficient number of 0.25 mm Pb equivalent radiation aprons and 0.5 mm Pb equivalent gloves will be available for use in areas where fluoroscopy is being conducted. 0.25 mm Pb equivalent thyroid shields and 0.75 mm Pb equivalent glasses will be provided to individuals who routinely exceed 100 mRem per month lens of eye dose and/or exceed 10% of the lens of eye dose (1500 mRem) in one year.
- 3) General care of radiation protection devices require them to be stored on specifically designed systems (either wall mounted or mobile floor units) for that purpose.
 - a) Folding, bending, draping of radiation protection devices in a manner other than approved hanging systems is identified as abuse and will result in premature wear and cracking requiring early replacement of the item.
 - b) Cleaning of radiation protection devices should be done on an as-needed basis when soiling occurs with a simple cleaning solution of mild soap and water. The device should be left to air dry on a specially designed system for storage of these items.

PROCEDURE/RESPONSIBILITIES

- 1) The Radiation Protection Devices Manager in Radiology will:
 - a) Inventory radiation protection devices in centralized fashion and maintain an electronic database of all radiation protection devices,
 - b) Conduct and document the results of an annual inspection of radiation protection devices on an on-going basis to ensure that integrity of the item and protection qualities are intact,
 - c) Adjust inventory to reflect new devices purchased throughout the year as well as devices disposed throughout the year, and
 - d) Forward any damaged radiation protection device to Occupational Health and Safety for disposal.

- 2) Each location utilizing fluoroscopic radiation will appoint a Radiation Protection Devices Coordinator (Coordinator), who will:
 - a) Conduct spot checks of the location's radiation protection devices to verify inspection date and proper storage procedures,
 - b) Coordinate purchase of radiation protection devices with the Radiation Protection Devices Manager,
 - c) Coordinate the annual inventory inspection with the Radiation Protection Devices Manager, and
 - d) Inform the Radiation Protection Devices Manager of lost or defective devices.

- 3) Ordering of Radiation Protection Devices
 - a) To insure consistency, all radiation protection devices ordered must comply with the following minimum radiation equivalent:
 - i. Aprons and thyroid shields – 0.25 mm Pb equivalent
 - ii. Gloves – 0.50 mm Pb equivalent
 - iii. Eyewear – 0.75 mm Pb equivalent.

 - b) New or replacement radiation protection devices will be ordered using a centralized method.
 - i. Each Coordinator must:
 1. Inform the Radiation Protection Devices Manager when a purchase order is issued for radiation protection devices, and
 2. Upon receipt of the radiation protection devices, forward devices to Radiation Protection Devices Manager for inventory and inspection.
 - ii. Radiation Protection Devices Radiation Protection Devices Manager will:
 1. Inspect new devices,
 2. Assign a unique inventory number to device and add into inventory, and

3. Return devices to the location that purchased the device for placement into service.

4) Inventory and Maintenance of Radiation Protection Devices

- a) Each radiation protection device will have its own unique inventory control number assigned by the Radiation Protection Devices Manager
 - i. Inventory numbers are assigned upon delivery of newly purchased items to the Radiation Protection Devices Manager.
 - ii. An inventory number must be permanently adhered to the radiation protection device by either stitching or an indelible marker.
 - iii. Inventory numbers will identify the location to which the device is assigned and allow tracking of the item.
- b) Each location is responsible for the daily maintenance of their radiation protection devices.
- c) Each Coordinator is responsible for conducting quarterly checks to ensure all devices are properly stored, identified, and inspected.
 - i. Unidentified devices (ie: devices not assigned a UAMS identification number) or devices with overdue inspection dates must be immediately removed from service and forwarded to the Radiation Protection Devices Manager for proper inventory and inspection.

5) Inspection of Radiation Protection Devices

- a) Cracks or holes can form in the radiation protection device compromising the integrity of the protection offered to the wearer. The best method for determining integrity of the device is to examine under fluoroscopy.
 - i. Radiation aprons with a defect over the gonads of greater than 15 mm² should be replaced.
 - ii. Radiation aprons with defects along the seam, in overlapped areas, in areas clearly not over a critical organ or on the back of the radiation apron are subject to less conservative rejection criteria of 670 mm².
 - iii. Thyroid shields with defects greater than 11 mm² should be replaced.
 - iv. Stitching holes around the seams are normal and NOT grounds for removing the device from service.
- b) The Radiation Protection Devices Manager will collaborate with each Coordinator for annual device inspection.
 - i. The Radiation Protection Devices Manager will notify Coordinators of the annual inspection date, time and location.

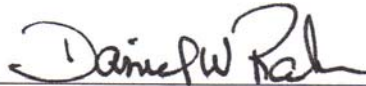
- ii. Each Coordinator must locate the radiation protection devices utilized in their area and provide to the Radiation Protection Devices Manager for inspection when requested.
 - iii. Devices not located/provided at the time of inspection will be noted as “Missing” in the radiation protection devices inventory database.
 - iv. Upon completion of inspection, the Coordinator must return the radiation protection devices to their area for use.
- c) Radiation protection devices found to be damaged will be sent to the Radiation Protection Devices Manager for disposal.
- i. The Radiation Protection Devices Manager will arrange with Occupational Health and Safety for proper disposal of the damaged devices.
 - ii. The Radiation Protection Devices Manager is responsible for removing the device from the inventory database.

REFERENCES

Lambert, K and McKeon T “Inspection of Radiation Aprons: Criteria for Rejection”, Operational Radiation Safety, Supplement to Health Physics, 80, suppl 5, May 2001, S67-S69.

UCLA Hospital Systems Policy 8014, Radiation Protection Devices – Inventory and Inspection

Arkansas State Board of Health’s Rules and Regulations for Control of Sources of Ionizing Radiation.

Signature: 

Date: October 5, 2011