Name: _____ Date: _____ Team: _____

Q.A. Lab Experiment # 2

Protective Lead Apparel Testing

Direct Radiography (DR)

Purpose

To assure that the lead aprons, gloves, gonadal shields, and thyroid collars provide optimal protection when positioned appropriately.

Learning Objectives

After completing this lab, you should be able to:

1. Use the laboratory equipment properly.
2. Set up the control console and ceiling tube mount correctly.
3. Function effectively in group work.
4. Perform the experiment independently.

Materials Needed

- Radiographic unit
- 14 x 17 inch FPD unit
- Lead aprons, gloves, gonadal, and thyroid shields

Pre-Lab Discussion

Lead aprons and gloves should be present in the radiographic room and should have a minimum 0.25 mm of lead-equivalent thickness.

Figure 1
Proper Storage of the Lead Apparel

Figure 2
Improper Storage of the Lead Apparel

Standards set forth by accrediting agencies dictate that healthcare organizations must perform routine inspections on protective lead apparel for defects such as holes, cracks, and tears, on an annual basis. These checks may be performed by visual or tactile means or x-ray imaging. If x-ray imaging is used, they can be radiographed or viewed fluoroscopically (with remote fluoroscopy if possible) on acceptance and then every 6 months thereafter to determine whether any cracks or holes are present (Figure 3 below). If a defect is found, protective devices shall be replaced or removed from service until repaired. Keep a record of when these inspections are performed, as well as the results and any corrective action as documentation for accrediting agencies. Software programs are available for maintaining these inspection reports. When not in use, protective lead apparel should be properly hung on clothing hangers to prevent cracks. Lead vinyl sheets and gonadal shields also should be evaluated in the same manner. If a piece of lead protective apparel is no longer usable, it must be disposed of in an appropriate manner. According to the Health Physics Society, lead and other heavy metals meet the criteria for a hazardous material under the Resource Conservation and Recovery Act. The best option for disposal is to recycle the protective apparel so that the lead can be reused.

Figure 3
Good and Damaged Lead Apparel

Instructions:

Option 1: If an image intensified fluoroscopy unit is available, this is the preferred way to inspect the aprons, gloves, and collars.

1. Lay out the item to be checked on the table.
2. Examine the entire item using the fluoroscope.
3. Record results on the Annual QC Checklist (Form 4).

Option 2: If an image intensified fluoroscopy unit is not available:

1. Closely inspect each item for kinks and irregularities.
2. Take a radiograph of suspect areas.
3. Process the film and look for breaks in the lead lining.
4. Record results on the Annual QC Checklist

Corrective Action:
Any item displaying breaks in the lead lining should be replaced.
Note: Lead aprons should never be folded. Cracks in the lead lining can develop at the fold, reducing the useful life of the apron.