Table of Contents

1.0 Introduction

1.1 Purpose

This guideline is provided to help educate employees responsible for purchasing radiation producing equipment as to the regulatory requirements for such equipment. This is not a procedure, as the process is subject to change depending on circumstances.

1.2 Scope

The regulatory requirements covered herein apply to any radiation-producing equipment, whether the use is clinical, veterinary, or research, at the facilities listed in Appendix A. It does not apply to radioactive materials or devices that incorporate radioactive materials. These regulatory requirements apply whenever such equipment is purchased, relocated, replaced, refurbished, repaired, resold, or disposed.

1.3 Definitions

Georgia DCH. Georgia Department of Community Health.

Department. The department that owns or is purchasing radiation-producing equipment.

2.0 Facility Registration

- Facilities with radiation-producing equipment must be registered with the Georgia DCH. Please see Appendix A for a list of registered facilities at Emory. Equipment in such facilities must be listed with the Georgia DCH. Radiation Safety is responsible for the facility registration and periodic updates of equipment lists.
- For new facilities, an application, a notarized affidavit and a registration fee is required. A qualified physicist will submit the application and affidavit. The registration fees are the responsibility of the department that owns the equipment.

3.0 Shielding Plan

- The shielding plan takes into account the occupancy and use of the areas surrounding radiation-producing equipment and specifies the materials and thicknesses required to provide the necessary radiation protection at each barrier. Except for some self-shielded analytic instruments, all radiation-producing equipment must have a shielding plan designed by a qualified physicist.
- An updated shielding plan may be necessary whenever equipment is replaced or refurbished.
- In the case of existing facilities, a shielding integrity survey may be necessary to verify the thicknesses of installed shielding prior to the completion of the shielding plan. Please see below.
- Please contact Radiation Safety as early in the planning stages as possible when a need for such equipment has been recognized so that the need for a shielding plan can be determined.
- See Appendix B for the information that must be submitted for all shielding plan requests.
- Once the information is complete, Radiation Safety will request the shielding

plan. Shielding plans usually take two weeks, but may take longer in the case of incorrect information, complex designs, or unique equipment types.
- Radiation Safety will forward the shielding plan to the department via email as soon as possible.
- Radiation Safety will forward the shielding plan to the Georgia Department of Community Health for review.
- The department is responsible for the installation of shielding according to the shielding plan.

4.0 Shielding Integrity

- Once the shielding has been installed, Radiation Safety will schedule a shielding integrity survey to verify the thickness of the installed shielding as well as its integrity (no holes or gaps). An integrity survey is ideally scheduled just after the shielding has been installed but before the walls are finished, in case repairs are needed. Please consult with your contractor and Radiation Safety so that the survey is scheduled at the most appropriate time.
- The physicist performing the survey may need a source of radioactive material from a nuclear medicine department or radiopharmacy to perform the survey. Radiation Safety will coordinate the delivery of such material to Emory laboratories if feasible.
- Radiation Safety will forward the shielding integrity report via email as soon as possible.
- In the case of an inadequate shielding integrity, the department will be responsible for corrective actions by the contractors and for scheduling a follow-up survey once repairs are complete.
- Radiation Safety will forward the shielding integrity report to the Georgia DCH as part of the facility registration and/or equipment list update.

5.0 Initial Survey and Room Scatter Survey

- Once the radiation-producing equipment has been installed, a qualified physicist must perform an initial survey prior to the equipment being used for clinical applications. A room scatter survey is also recommended at this time to verify that the shielding configuration for the installed equipment adequately protects employees and members of the public in surrounding areas.
- An initial survey prior to clinical use is necessary whenever equipment is repaired, replaced or refurbished. A room scatter survey may be needed as well. Please contact Radiation Safety to determine what tests are required.
- Once the initial survey is complete and the qualified physicist has verified that no deficiencies were found, the equipment may be used for clinical applications.
- Radiation Safety will forward the initial survey and room scatter survey reports to the department via email as soon as possible.
- The department is responsible for correcting any deficiencies found during the initial survey and room scatter survey.
- Radiation Safety will forward the initial survey and room scatter survey reports to the Georgia DCH as part of the facility registration and/or equipment list update.

Appendix A: Emory Registered Facilities

Emory University Hospital
1364 Clifton Road NE
Atlanta, GA 30322
DeKalb County
Registration Number 002-1006

Emory University Hospital Breast Imaging Center
1365 Clifton Rd NE Building C
Atlanta, GA 30322
DeKalb County
Registration Number 002-0033A

Emory University Hospital at Wesley Woods
1821 Clifton Road NE
Atlanta, GA 30329
DeKalb County
Registration Number 002-1001A

Emory University Hospital Midtown
550 Peachtree St NE
Atlanta, GA 30308
Fulton County
Registration Number 001-1007

Emory University Orthopaedics & Spine Hospital (includes MOB)
1455 Montreal Rd
Tucker, GA 30084
Registration Number 002-1003

Emory University Hospital Smyrna
3949 S. Cobb Drive SE
Smyrna, GA 30080
Cobb County
Registration Number 003-1003

Emory Smyrna Orthopaedics
3903 S. Cobb Drive SE, Suite 200
Smyrna, GA 30080
Cobb County
Registration Number 003-1003 (same as EUHS)

Emory Orthopaedics & Spine Center
59 Executive Park Drive South
Atlanta, GA 30329
Registration Number 002-0287

Emory Sports Medicine Center
1 Hawks Lane
Atlanta, GA 30329
Registration Number Pending

Winship Cancer Center
1365 Clifton Rd NE, Building C
Atlanta, GA 30322
DeKalb County
Registration Number 002-0037

The Emory Clinic
1365 Clifton Rd NE
Atlanta, GA 30322
DeKalb County
Registration Number 002-0249

The Emory Clinic at EJCH
6335 Hospital Parkway
Johns Creek, GA 30097
Fulton County
Registration Number 001-0192A

The Emory Clinic at ESJH
5673 Peachtree Dunwoody Rd
Atlanta, GA 30342
Fulton County
Registration Number 001-0197A

The Emory Clinic at Sugarloaf
1845 Satellite Blvd Suite 500
Duluth, GA 30097
Gwinnett County
Registration Number 011-0085

Emory University (Main Campus Veterinary and Research)
(by building address)
DeKalb County
Registration Number 002-9019

Appendix B: Required Information for Shielding Plans and Radiation-Producing Equipment (p. 1 of 3)

For ALL Equipment:

Facility Name	
Address	
City, State, Zip	
Phone Number	
Fax Number	
Email	
Contact and Title	

Installation/Sales Vendor/Architect	
Address	
City, State, Zip	
Phone Number	
Fax Number	
Email	
Contact and Title	

Deadline for shielding design*	
Scheduled completion of Lead Installation	
Scheduled completion of Equipment Installation	
Scheduled facility start date	
Make, Model and S/N of existing machine	
Disposition of existing machine (storage/relocation/disposal/other)	

*usually requires 2 weeks; must order lead *at least* 4 weeks prior to installation

Room #	
Floor Level (Basement, 1st, 2nd, etc.)	
Room Height (from concrete slab of ceiling to concrete slab of floor)	
Room Height of floor below	
Occupancy above room (i.e., roof-sky, corridor, lab, x-ray room, etc.)	
Occupancy below room (i.e., slab-on-grade, doctor office, storage, etc.)	
Minimum thickness and density of concrete floor slab	
Minimum thickness and density of concrete ceiling slab	

Appendix B: Required Information for Shielding Plans and Radiation-Producing Equipment (p. 2 of 3)

Attach the following Drawings/Plans, with scale or dimension on drawing to adjust documents

	Floor plan of the entire facility indicating the location of the relevant room (1/8"= 1')
	Site-specific floor plan of room showing equipment location, including but not limited to: (1) Control panel and control switch, (2) view window, (3) patient table, (4) x-ray machine, (5) doors & windows, (6) ANY PENETRATIONS in the walls, (7) other equipment (1/8"= 1')
	Description of all areas around the x-ray room (i.e., type of space: office, exterior (what floor), restroom, dressing room, break room, exam room, film reading room, corridor, waiting, etc.)
	Floor plans of areas above AND below relevant room, if applicable (1/8"= 1')

For CT Machines:

Manufacturer	
Model Name and Number	
Max Operating kVp	
Average Operating kVp	
Max Continuous Rated Tube Current (mA)	
Date of Installation	
Number of exams* per 40 hour week	Head Exams: /wk Body Exams: /wk
Percentage of single phase** exams	Head: % Body: %
Indicate number of scans*	Head: /week Body: /week
Attach CT Scatter Plot (if not included in site-specific drawings, check Pre-Installation manual)	
Instrument is to be ACR accredited?	Y / N

*A exam is defined as a set of helical or axial CT exposure run(s) to a patient. A body exam includes all exposures below the head, i.e. chest, cardiac, abdomen, pelvis, etc.
** A "with contrast" exam or a "without contrast" exam are both single phase exams. Localizers, test bolus, and monitoring bolus series are not considered separate phases. A "with and without contrast" exam or a "multiphasic" exam is an exam with more than one phase.

For Fluoroscopic Units:

Manufacturer	
Model Name and Number	
Max Operating kVp	
Average Operating kVp	
Max Continuous Rated Tube Current (mA)	
Maximum Field Size	
Digital Unit?	Y / N
Date of Installation	
Number of patients per 40 hour week	
Average Fluoroscopic Beam-On Time per Patient	

Appendix B: Required Information for Shielding Plans and Radiation-Producing Equipment (p. 3 of 3)

For Radiographic Units:

Manufacturer	
Model Name and Number	
Max Operating kVp	
Average Operating kVp	
Maximum Field Size	
Digital Unit?	Y / N
Date of Installation	
Number of patients per 40 hour week	

For R/F Units:

Manufacturer	
Model Name and Number	
Max Operating kVp	
Average Operating kVp	
Max Continuous Rated Tube Current (mA)	
Maximum Field Size	
Digital Unit?	Y / N
Date of Installation	
Number of patients per 40 hour week	
Number of Rad Patients	/week
Number of Fluoro Patients	/week
Average Fluoroscopic Beam-On Time per Patient	

For Other Units:

Description	
Manufacturer	
Model Name and Number	
Max Operating kVp	
Average Operating kVp	
Maximum Field Size	
Digital Unit?	Y / N
Date of Installation	
Number of patients per 40 hour week	