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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, Healthcare Facility Regulation Division

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

Radiation Safety. The Radiation Safety group within the Emory University Environmental Health and Safety Office.

ZapIT Medical. https://www.zapitmedical.com, online database of all radiation-producing equipment at Emory University and Emory Healthcare. Documentation for all equipment is organized by facility and machine. Please contact Radiation Safety for required training prior to access.

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. Radiation Safety will forward to the requester the payment coupon that must be submitted with payment. The registration fees are the responsibility of the department that owns the equipment. A check for the fee can either be mailed in directly or forwarded to Radiation Safety for inclusion with the application, or a SpeedType can be provided to Radiation Safety for charging back the fee.
- Registration updates or new registrations may be required when a registered facility changes its name, location, or ownership. Please notify Radiation Safety immediately should such a change be planned. Radiation Safety will submit written notification to the Georgia DCH.
- Radiation Safety will submit periodic notifications of new and disposed equipment to the Georgia DCH.

3.0 Shielding Design

- The shielding design considers 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 design designed by a qualified physicist.
- An updated shielding design 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 design. 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 design can be determined.
- See Appendix B for the information that must be submitted for all shielding design requests.
- Once the information is complete, Radiation Safety will request the shielding design. Shielding designs 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 design to the department via email as soon as possible.
- Radiation Safety will send the shielding design, by email, to the Georgia DCH for review.
- Radiation Safety will upload the shielding design review letter from the Georgia DCH to ZapIT.
- The department is responsible for the installation of shielding according to the shielding design.

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 upload the shielding integrity report(s) to ZapIT.

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 appropriate completed Initial X-Ray Inspection Form to the Georgia DCH for review.
- Radiation Safety will upload the initial survey and room scatter survey reports to ZapIT.
- The department is responsible for correcting any deficiencies found during the initial survey and room scatter survey prior to use.
- The department is also responsible for implementing any recommendations found during the initial survey and room scatter survey, but such recommendations should not prevent the use of the equipment.

Appendix A: Emory Registered Facilities

Emory University Hospital Midtown
550 Peachtree St NE
Atlanta, GA 30308
Fulton County
Registration Number 001-01007

Emory St. Joseph's Hospital
5665 Peachtree Dunwoody Rd
Atlanta, GA 30342
Fulton County
Registration Number 001-01006

Emory Johns Creek Hospital
6325 Hospital Pkwy
Johns Creek, GA 30097
Fulton County
Registration Number 001-00011A

The Emory Clinic at EJCH
6335 Hospital Parkway
Johns Creek, GA 30097
Fulton County
Registration Number 001-00192A

The Emory Clinic at ESJH
5673 Peachtree Dunwoody Rd
Atlanta, GA 30342
Fulton County
Registration Number 001-00197A

Emory at Peachtree City
3000 Shakerag Hill
Peachtree City, GA 30269
Fulton County
Registration Number 001-00259

Emory School of Medicine Woodruff Extension Building
46 Armstrong Street SE
Atlanta, GA 30303
Fulton County
Registration Number 001-92677

Emory University Hospital Breast Imaging Center
1701 Uppergate Dr
Atlanta, GA 30322
DeKalb County
Registration Number 002-00033A

Winship Cancer Center
1365 Clifton Rd NE, Building C
Atlanta, GA 30322
DeKalb County
Registration Number 002-00037

Emory Ambulatory Surgery Center at Dunwoody
(includes Emory Orthopaedics and Spine Center at Dunwoody)
4555 North Shallowford Rd
Atlanta, GA 30338
DeKalb County
Registration Number 002-00059A

Emory Sports Medicine Complex
1968 Hawks Lane
Brookhaven, GA 30329
DeKalb County
Registration Number 002-0088A

Emory at Decatur Orthopaedics and Sports Medicine
1014 Sycamore Dr, Suite A
Decatur, GA 30033
DeKalb County
Registration Number 002-0105A

The Emory Clinic
1365 Clifton Rd NE
Atlanta, GA 30322
DeKalb County
Registration Number 002-00249

Emory Orthopaedics & Spine Center
59 Executive Park Drive South
Atlanta, GA 30329
DeKalb County
Registration Number 002-00287

Emory University Hospital at Wesley Woods
1821 Clifton Road NE
Atlanta, GA 30329
DeKalb County
Registration Number 002-01001A

Emory University Orthopaedics & Spine Hospital
(includes Medical Office Building)
1455 Montreal Rd
Tucker, GA 30084
DeKalb County
Registration Number 002-01003

Emory Decatur Hospital
2701 N Decatur Rd
Decatur, GA 30033
DeKalb County
Registration Number 002-01004

Emory University Hospital
1364 Clifton Road NE
Atlanta, GA 30322
DeKalb County
Registration Number 002-01006

Emory Long Term Acute Care
450 N. Chandler Street
Decatur, GA 30033
DeKalb County
Registration Number 002-01011

Emory Hillandale Hospital
2801 DeKalb Medical Parkway
Lithonia, GA 30058
DeKalb County
Registration Number 002-01017

Emory Decatur Hospital Comprehensive Breast Center
2665 North Decatur Rd
Decatur, GA 30033
Registration Number 002-02776

Emory Decatur Hospital Radiation Oncology
2675 North Decatur Road
Decatur, GA 30033
DeKalb County
Registration Number 002-02792

Yerkes National Primate Research Center
954 N Gatewood Drive
Atlanta, GA 30322
DeKalb County
Registration Number 002-9002A

Emory University School of Medicine-CR (Rollins)
1510 Clifton Rd NE, Ste G239
Atlanta, GA 30322
Registration Number 002-9009A

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

Emory Ambulatory Surgery Center at Spivey Station
7813 Spivey Station Blvd, Suite 100
Jonesboro, GA 30236
Clayton County
Registration Number 008-0010A

Emory Orthopaedics & Spine Center at Spivey Station
7813 Spivey Station Blvd Suite 200
Jonesboro, GA 30236
Clayton County
Registration Number 008-0022A

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

Yerkes National Primate Research Center Field Station
2409 Taylor Lane
Lawrenceville, GA 30043
Gwinnett County
Registration Number 011-9001A

Emory Clark-Holder Clinic
303 Smith Street
LaGrange, GA 30240
Troup County
Registration Number 020-0003

Emory Southern Orthopedics and Sports Medicine
1805 Vernon Road, Suite B
LaGrange, GA 30240
Troup County
Registration Number 020-0003A

Emory Clark-Holder Clinic/Davis Road
380 South Davis Road, Suite C
LaGrange, GA 30241
Troup County
Registration Number 020-0007A

West Point Family Practice
1610 E 10th Street
West Point, GA 30118
Troup County
Registration Number 020-0018

Emory at Stockbridge
3579 Highway 138 SE, Suite 101
Stockbridge, GA 30281
Clayton County
Registration Number 038-0012

Emory at Belmont
1060 Windy Hill Rd SE, Suite 100
Smyrna, GA 30080
Cobb County
Registration Number Pending

Emory at Sharpsburg
3345 East Highway 34, Suite 101
Sharpsburg, GA 30277
Coweta County
Registration Number Pending

Emory Orthopaedics & Spine Center – Conyers
1567 Milstead Rd NE, Suite B
Conyers, GA 30012
Rockdale County
Registration Number Pending

Appendix B: Required Information for Shielding Designs 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

New Facility?	
New Construction?	
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 Designs 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:	/wk	Body:	/wk
Attach CT Scatter Plot (if not included in site-specific drawings, check Pre-Installation manual)				
Instrument is to be ACR accredited?	Y / N			

*An 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 Designs 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	