DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health
Office of Engineering

APPLICATION FOR PLAN REVIEW

Complete and submit this form **with radiation shielding plans and specifications** according to the guidelines listed below. Radiation shielding plans should be approved before construction and before operation of the x-ray equipment. The Office of Engineering approval of the radiation shielding design does not imply local building code approval. Minimum shielding requirements form (OE-R15A) is attached. Please allow two (2) weeks for processing of complete applications. **Incomplete applications will be returned.**

Note: X-ray devices with maximum energy specification less than or equal to 70 kVp do NOT require a shielding plan.

http://www.dhss.delaware.gov/dph/hsp/orc.html

For use by Office of Engineering Plan Review Number:			Facility Radiation Machine Registration number:	
A. Location of proposed X-ray room(s)			☐ **Send results to this address**	
Facility Name			Practitioner Name	
Address			Unit/Suite Number	
City	State	County	Zip Code	E-mail Address
Expected Date of Project Completion			Facility Registration No.	
Telephone Number	Fax Number		Cell Number	
B. Radiation service provider registration (plan prepared by)			☐ **Send results to this address**	
Company Name			Contact Name	Delaware PR3 No.
Address			Unit/Suit Number	
City	State	Zip Code	E-Mail Address	
Telephone Number	Fax Number		Cell Number	
Mail application to: **Office of Engineering** **43 South DuPont Hwy.** **Dover, Delaware 19901** **Phone: 302-741-8640** **Fax: 302-741-8631**			***For use by the Office of Engineering*** Date received:	

C. Purpose of application

☐ New X-ray room (new construction) ☐ Renovating an existing X-ray room ☐ New equipment in existing X-ray room ☐ New owner of an existing X-ray facility

D. Type of facility

☐ Hospital ☐ Radiography ☐ Dental ☐ Analytical

☐ Podiatric ☐ Veterinary ☐ Medical ☐ Other_____

☐ Educational ☐ Chiropractic ☐ Industrial

E. Type of machine and anticipated workload

☐ Radiography ☐ Extremity only ☐ Fluoroscopy ☐ Special procedures

☐ Mammography ☐ Linear accelerator ☐ Industrial ☐ Educational

☐ Dental cephalometric ☐ Dental cone beam CT ☐ Dental panographic ☐ Dental intra-oral

☐ CT scanner ☐ Other_____

Manuf./model:_____ Maximum milliamperage (mA): _____

Location:_____ Anticipated radiographic workload: _____

Maximum kilovoltage (kVp)*: _____ mA-minutes per week:_____ or patients per week: _____

***Note: less than 70 kVp no shielding plan required.**

Copy this page for additional machines or describe in a separate document.

F. Attach drawing of room

Provide construction specifications of rooms and adjacent areas (to scale). Scale must be ¼ inch per foot or larger. Verify that ALL of these items are included in your submittal. Incomplete submittals will be returned.

☐ All x-ray equipment and accessories	☐ Compass Direction
☐ Windows	☐ Exposure switch (exact location)
☐ Patient viewing window	☐ X-ray tube (and extent of movement)
☐ Wall cassette holder	☐ The height of the shielding installed
☐ X-ray table (including the extent of movement)	☐ Information about the height of adjacent buildings
☐ The exact location of all proposed shielding	☐ Occupancy above and below
☐ The thickness of the proposed shielding	☐ Building material thickness, if used for shielding (include architectural documentation)
☐ Doors (solid or lead lined)	
☐ Operator's barrier	☐ To scale plans or blue prints

Specify proposed shielding, such as lead (note thickness), brick veneer, solid or hollow-core concrete block, cinder block, poured concrete, etc. Indicate the thickness and density of concrete and masonry materials. For corrugated concrete floors and ceilings that are used as shielding, include the MINIMUM concrete thickness and the density (or unit weight) of the concrete in pounds per cubic foot.

Include a description of the occupancy and control of adjoining areas including above and below the x-ray room on the plans.

Include a description of any area beyond an outside wall, such as lawn, parking lot, and sidewalk. For exterior walls, show distance to property line and to closest area where individuals may be present.

Include the distance to any multi-story buildings which are nearby.

CT Scanners

Include a copy of the iso-exposure curve normally provided by the manufacturer and calculations performed by a Qualified Medical Physicist.

Linear Accelerators

For accelerator facilities, include all assumptions and calculations upon which the proposed shielding is based. Such calculations should address instantaneous dose equivalent rates, as would be measured with a rate-type survey meter, and integrated weekly doses to adjacent areas for worst-case operating conditions. Specify neutron shielding methods for duct work and for other room penetrations, such as the use of borated polyethylene doors. Specify therapeutic workload in terms of rads or cGy per week at 1 meter.

Notify the Office of Engineering promptly if changes are made which require re-evaluation of the plans.

ITEM #	INSTRUCTIONS/DEFINITIONS
1. Location of Proposed X-ray Room	Location means room in which one or more X-ray systems are installed for use.
2. Radiation Service Provider	Means the company or person registered with the Office of Radiation control who provides radiation services to your facility.
3. Purpose of Application	Specify if this is an application for a new facility, renovation of an existing radiation room without equipment change, renovation of an existing radiation room with new equipment installation, or change of ownership of an existing radiation facility.
4. Type of facility	Specify exactly which radiation modalities and examinations are performed by checking all that apply. The conditions of your facility's registration, Approval to Construct (ATC) letter and/ or approval for a new or renovated facility will be limited to those specific procedures for which your facility has applied for registration.
5. Type of Machine and Anticipated Workload	Means the type of modalities being performed by the X-ray equipment. Specify all that apply.
6. Attached Room Drawing	Provide a scaled drawing of the X-ray room. Show location of X-ray equipment, location of all windows, doors and operators booth. Show the occupancy of adjoining areas including areas above and below X-ray rooms. Show the relative distances from the X-ray equipment to the barriers and occupied areas. Provide also the construction specifications for the radiation room, operators control booth(if applicable), radiation room door, flooring material, window type, ceilings etc.

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MINIMUM SHIELDING REQUIREMENTS
Report Form (OE-R15A)

CERTIFICATE OF APPROVAL NO._____

Radiation Consultant _____

Facility Name_____

Room_____

Registration No._____

Address_____

Expires_____

Workload_____milliampere minutes per week @ _____ kVpeak (only if >than 70kVp)

BARRIERS A, B, C, etc	P/S	D	kVp	W	U	T	AREA	SHIELDING REQUIREMENT*

P = Primary	kVp = Peak tube	C = Controlled area (design maximum limit 10 mrems per week)
S = Secondary	potential	NC = Non controlled area (design maximum limit 2.0 mrems per week)
D = Meters from tube to barrier	W = mAmin/wk	
	U = Use	
	T = Occupancy	

References: NCRP Reports Number 145, 147, and 151.
Delaware Administrative Code, Title 16, 4465 (Delaware Radiation Control Regulations)