



**DIRECTIONS FOR SHIELDING PLANS:**

**MEDICAL FACILITIES**

*(Please complete forms as follows)*

Complete questions # 1-9 as well as a diagram of the floor plan from question #6.

**INDUSTRIAL FACILITIES (OR NON-MEDICAL FACILITIES)**

*(Please complete forms as follows)*

Complete questions # 1-5 if the unit is handheld or mobile and NOT a fluoroscopy unit. If it is fluoroscopy, please also complete question #9.

Complete questions # 1-9 if the unit is a fixed position unit.

**Kansas Department of Health and Environment (KDHE)  
RADIATION CONTROL SECTION**

Website: [www.kdheks.gov/radiation/index.html](http://www.kdheks.gov/radiation/index.html)

Ref: K.A.R. 28-35-167 through 169

**INFORMATION REQUIRED FOR AN X-RAY RADIATION SHIELDING PLAN REVIEW**

<b>X-ray Registration Number:</b> <i>(if new, leave blank)</i>	
<b>Name of proposed user and owner of x-ray equipment:</b>	
<b>Business/Facility Name:</b>	
<b>Address:</b>	
<b>City, State, ZIP:</b>	
<b>Phone #:</b>	
<b>Fax #:</b>	
<b>Email Address:</b>	
<b>Room #(s):</b>	

Provide the address where to send our review of your plan *(if it is different than the address of the proposed installation.)*

**FOR MEDICAL FACILITIES:**

Type of medical facility *(check the appropriate box):*

- Hospital   
  M.D./D.O. (including clinics, surgery centers, pain mgmt., weight loss, etc.)   
  DDS   
  Podiatry  
 Veterinary   
  Chiropractic   
  Educational  
 Other (list):

**FOR MEDICAL FACILITIES:**

Type of medical x-ray equipment *(check the appropriate box):*

- Radiographic   
  Fluoroscopic (fixed and mobile c-arms)   
  Radiographic/Fluoroscopic   
  CT   
  Mammography  
 Cardiac Cath   
  Angiography   
  Dental-Intraoral   
  Dental-CBCT   
  Dental-Ceph   
  Dental-Pano  
 Dental-Ceph/Pano Combo   
 Bone Mineral Densitometry   
 Particle Accelerator   
 Educational   
 Analytical  
 Cabinet   
 Security   
 Other (list):

**FOR INDUSTRIAL (OR NON-MEDICAL FACILITIES):**

Type of industrial facility (check the appropriate box):

- Industrial    Public Facility    Educational  
 Other: (example: recycling facility, oil refinery, etc.)
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**FOR INDUSTRIAL (OR NON-MEDICAL FACILITIES):**

Type of industrial x-ray equipment (check the appropriate box):

- Particle Accelerator    Analytical    Cabinet    Security    Educational  
 Other: (list)
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**Please answer all questions for each room. Make copies of this form for more than one room.**

1. Make and model of the x-ray generator or control:

Room #: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

Model #: \_\_\_\_\_

Serial #: \_\_\_\_\_

Date of Manufacture: \_\_\_\_\_

2. Maximum mAs used per procedure: \_\_\_\_\_

Maximum mA \_\_\_\_\_ per procedure

Maximum exposure time in seconds per procedure \_\_\_\_\_

Maximum on-time of x-ray beam per procedure in  sec    min    hrs (check box and list amount) \_\_\_\_\_

3. Maximum kVp used per procedure: \_\_\_\_\_

4. Type of procedures which will be performed with the equipment: (examples): \_\_\_\_\_
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5. Workload: Average number of procedures or exposures per week: \_\_\_\_\_  procedures    exposures

6. Please provide a floor plan that shows, at a minimum, the following for each room or device: (You may use the graph paper provided on page 3 or provide your own layout form/architectural drawing.)

- a) the normal location of the x-ray system's radiation port or diagnostic tube
- b) the port or diagnostic tube housing's travel and traverse limits
- c) the direction or directions of the useful x-ray beam
- d) the locations of any windows and doors
- e) the location of the operator's booth
- f) the location of the x-ray control panel
- g) the dimensions of each room concerned

7. What is the structural composition, thickness or lead equivalent of each room concerned: (Indicate primary or secondary barrier.) Primary barrier is a wall/floor that the direct x-ray beam strikes. Secondary barrier is a wall/floor that secondary/scatter radiation strikes.

Walls:

\_\_\_\_\_

Doors:

\_\_\_\_\_

Partitions:

\_\_\_\_\_

Floor:

\_\_\_\_\_

Ceiling:

\_\_\_\_\_

8. What is the type of occupancy factor\* of each adjacent room/area, inclusive of space above and below the rooms concerned. If there is an exterior wall, please show on floor plan or write the distance to the closest areas where it is likely that individuals may be present:

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*\*(i.e., Is public access "controlled" by you or is it "open and freely available" to the general public? Is it continuously occupied or what percentage for the time is it occupied?)*

9. Name/address/phone #/ email of the qualified expert, medical/health physicist, or other, which may have computed the shielding requirements, including all basic assumptions and recommendations.

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**Submit x-ray room plans and specifications with this completed form to:**

**Kansas Department of Health and Environment  
Bureau of Community Health Systems, Radiation Control Program  
1000 SW Jackson, Suite 330, Topeka, KS 66612-1365  
Phone 785-296-1560, Fax 785-559-4251  
E-mail: [kdhe.xray@ks.gov](mailto:kdhe.xray@ks.gov)**

ROOM(S) DRAWING (use additional copies if necessary)

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

ROOM # OR MACHINE NAME OR MODEL #: \_\_\_\_\_

A large grid area for drawing the x-ray room plan, consisting of 30 columns and 30 rows of small squares.

**DEFINITIONS OF TYPES OF FACILITIES**

M.D./D.O. OFFICE—Facilities such as clinics, surgery centers, pain management, weight loss, etc.

EDUCATIONAL—A facility that uses x-ray equipment as part of an educational program for training purposes.

INDUSTRIAL—A facility that uses x-ray to examine a structure or analyze a material (uses higher energy x-rays).

PUBLIC FACILITY—A facility that is occupied by members of the general public (i.e., baggage claim, security device).

## **DEFINITIONS OF TYPES OF X-RAY MACHINES**

**ANALYTICAL**—X-ray equipment used for analysis of samples (i.e., XRF units that are either hand-held or a cabinet unit).

**BONE DENSITOMETER**—A device intended for medical purposes to measure bone density and mineral content by x-ray or gamma-ray transmission measurements through the bone and adjacent tissues.

**CABINET X-RAY**—X-ray equipment designed to be used inside a cabinet. Use for radiography of samples or small items (i.e., used in mailrooms and airports or security checkpoints)

**C-ARM**—Diagnostic equipment designed with the tube head and film holder fixed in alignment (i.e., used in surgery & fluoroscopy. Can also be a fixed unit, example: cath lab).

**COMPUTED TOMOGRAPHY (CT)**—A diagnostic x-ray system intended to produce cross-sectional images of the body by computer reconstruction of the x-ray transmission on data.

**DENTAL CEPHALOMETRIC**—Diagnostic x-ray equipment used to demonstrate the alignment between bony and soft tissue structures where the film is placed outside the mouth.

**DENTAL CEPHALOMETRIC/PANORAMIC COMBO**—An x-ray unit with both cephalometric and panoramic capabilities.

**DENTAL INTRAORAL**—Radiography of the teeth where the film or detector is placed inside the mouth.

**DENTAL PANORAMIC**—A dental x-ray unit that images a two-dimensional view of the upper and lower jaw region.

**CONE BEAM CT UNIT**—(dental or ENT) A variation of the traditional CT system. Systems capture data using a cone-shaped x-ray beam and the data is used to reconstruct a 3D image.

**FLUOROSCOPIC ONLY**—Diagnostic radiography equipment used to image moving structures. These units can be fixed units or mobile units. (i.e., used in angiography, surgery, cardiac cath lab, example: c-arm unit).

**INDUSTRIAL X-RAY**—X-ray device that is used to radiograph metal or equipment.

**MAMMOGRAPHY**—A device intended to be used to produce radiographs of the breast.

**PARTICLE ACCELERATOR**—Non-medical accelerators.

**RADIOGRAPHIC ONLY**—Diagnostic radiography equipment used to produce stationary images (i.e., used in hospitals, clinics, chiropractic offices, podiatrist offices, osteopath offices, veterinary offices & orthopedic offices).

**RADIOGRAPHIC AND FLUOROSCOPIC COMBO**—Diagnostic equipment with both radiographic and fluoroscopic capabilities (i.e., used in hospitals and clinics).

**SECURITY**—Equipment used for Security Screening for use on humans. (full body x-ray scanner)

**THERAPEUTIC ACCELERATOR**—An accelerator used for radiation therapy.

**THERAPEUTIC X-RAY**—An x-ray device used for superficial x-ray therapy.