**KENTUCKY SHIELDING PLAN BEST PRACTICE POLICY**

**(1) Who needs to submit Shielding Plans**

1. All diagnostic medical X-ray, fluoroscopic, CBCT and CT units installed at new facilities.
2. Relocation of a unit within a facility or to a new facility.
3. All installations of therapeutic X-ray or accelerator units.
4. All installations of stationary X-ray equipment at veterinary offices.
5. All dental cephalometric, dental CTs, CBCT (3D) and TMJ units.
6. Podiatry units.
7. Mammography units.
8. Replacement, modifications or increased workloads to existing units.
9. All medical mobile and or portable X-ray equipment used for more than one week in one location (902 KAR 100:120 Section 5 (3), (4), (5)).

**(2) Shielding Plans Not Typically Required For**

1. Dental intraoral units. (But shall meet operator and public protection requirements listed in section 4)
2. Most self-shielded industrial equipment and analytical X-ray equipment.
3. Bone density units (DEXA). (See requirement below section 5)
4. Portable veterinary X-ray units or veterinary dental units.
5. Mobile c-arms or portable units that are frequently moving between surgical suites, rooms etc.
6. Correctional facilities. (See requirement in section 6)

**(3) Important considerations**

1. Existing facilities that have not filed shielding plans are subject to review. If an inspector finds

a facility may be placing the operator or the public to unnecessary exposure the cabinet may request that the facility perform a shielding plan evaluation or may be found to be in violation of **902 KAR 160 Section 2**. (See additionally 902 KAR 100:15 Section 2 and 8).

2. **902 KAR 100:160 Section 2.** Prior to construction or modification of an x-ray facility,

the plans and specifications for construction or modification shall be evaluated by a qualified expert. A report of his evaluation shall be submitted to the Cabinet for review and approval.

3. **902 KAR 100:105 Section 2** (i) Each installation shall be provided with primary barriers and

secondary barriers as are necessary to ensure compliance with these administrative

regulations. This requirement shall be deemed to be met, if the thickness of barriers are equivalent to those as computed in accordance with the National Council of Radiation Protection Report No. 49, "Structural Shielding Design and Evaluation for Medical Use of X-rays and Gamma Rays of Energies up to 10 MeV"; and

1. Doors that are an integral part of primary and secondary barriers shall be closed during x-ray procedures; and

2. Doors in Section subparagraph 1 of this paragraph "CLOSE DOOR DURING X-RAY PROCEDURES".

4. Currently NCRP Report No. 49 has been superseded. The cabinet will accept plans

for room shielding that conform to the most current requirements defined in the various handbooks published by the National Council on Radiation Protection and Measurements (147,151).

**(4) Operator and Public Protection for dental intraoral and panoramic (not to include cephalometric, or units with CBCT)**

1. Except for hand-held x-ray systems with integral shields, each installation shall be

provided with a protective barrier for the operator or shall be so arranged that the operator can conveniently stand at least six (6) feet from the patient, the tube housing assembly, and outside the path of the useful x-ray beam while making an exposure.  The operator shall be able to maintain view of the patient directly or by use of mirrors.

2. If 6 feet cannot be maintained, then a barrier shall be provided, with the ability to view the

patient, while taking the exposure.

3. The operator shall monitor and secure the area prior to making an exposure near public

areas.

4. In dental facilities using large, multi-patient open-bay designs, a patient in proximity to

another patient being radiographed shall be treated as a member of the public.

**(5) DEXA Dual-Energy X-ray Absorptiometry (DXA) (Bone Densitometry)**

1. Require a room with four walls and a door.

2. Require that the operator be able to sit at least 6 feet away from the source of radiation.

(If unable to meet 6 feet requirement, submit a formal letter stating special circumstances for consideration (ex. pencil beam etc.)).

**(6) Correctional Facilities Radiation Protection Requirements**

1. Shall submit a room layout with measurements for each Whole Body Scanner installed,

operator console and inspection zone boundaries. The room layout shall also include any

other radiation producing machines that are present such as package scanners (if utilizing).

2. The installing vendor shall provide a radiation protection survey to verify the Whole Body

scanner was installed in compliance with 902 KAR 100 and applicable ANSI standard it

conforms to.

**(7) Replacement Units for Radiographic, CT, CBCT and Fluoroscopic**

1. If the facility has a copy of the original shielding plan and approval letter and the unit has the

same outputs, is in the same location, same isocenter and same workloads a new shielding plan does not need to be submitted.

2. CT, CBCT and Fluoroscopic Replacement units the facility shall submit to the

cabinet a copy of the original shielding plan with approval letter, a letter from the facility verifying the specifics of the replacement (same location, same primary barrier, same workloads, same occupancy) and a protection survey prior to patient use. (No additional charges or approval fees)

**(8) Replacement Units for Linear Accelerators**

1. Replacement linear accelerator units shall have the facility’s qualified expert or RSO submit

to the cabinet a copy of the original shielding plan with approval letter, a letter from the facility verifying the specifics of the replacement (same location, same primary barrier, same workloads, same occupancy, same isocenter, same procedures) and a protection survey prior to patient use. (No additional charges or approval fees)

**(9) Protection Surveys**

1. New technology or new use machines may require the submission of a protection survey and

submission of policies and procedures to assure the safe use of the device.

2. CT and fluoroscopic units will require a protection survey to be submitted within 30 days of

initial use, in addition to their approved shielding plan.

3. Linear accelerators will require a protection survey to be submitted prior to patient use, in

addition to their approved shielding plan.

**(10) Required Information to be included with the plan review 902 KAR 100:160**

1. The normal location of the radiation- producing equipment's radiation port; the port's travel and

traverse limits; general direction(s) of the radiation beam; locations of any windows and doors; the location of the operator's booth; and the location of the equipment's control console.

2. Structural composition and thickness or lead equivalent of walls, doors, partitions, floor, and

ceiling of the room(s) concerned.

3. The dimensions of the room(s) concerned. (Preferably a scaled floor plan drawing one fourth

(1/4) inch equal to one (1) foot)

4. The type of occupancy of adjacent areas inclusive of space above and below the room(s)

concerned. If there is an exterior wall, the distance to the closest area(s) where it is likely that

individuals may be present.

5. The make and model of the radiation- producing equipment including the maximum energy

output. (For CT, please include any CT unit manufacturer Iso Exposure curves)

1. The type of examination(s) or treatment(s) to be performed with the equipment (e.g., dental,

orthodontal, chest, gastrointestinal, fluoroscopic, podiatry, fixed therapy, rotational therapy, or other).

1. Information on the anticipated workload. (Please anticipate any workload increases with increased patient loads, inspectors may review exam logs on site. If workloads have exceeded the current plan, the cabinet may request a new shielding plan be performed).
2. The facility preregistration or registration number. (Included in the shielding plan coversheet located on the website).

**(11) Records**

Facilities shall maintain a permanent record of the facility shielding plans, cabinet approvals and protection surveys on file and accessible for the inspector review onsite.

**(12) Applicable reference regulations**

902 KAR 100

[Title 902 Chapter 100 • Kentucky Administrative Regulations • Legislative Research Commission](https://apps.legislature.ky.gov/law/kar/titles/902/100/)

902 KAR 100:15, 902 KAR 100:19, 902 KAR 100:105, 902 KAR 100:120, 902 KAR 100:160

**(13) To Submit Shielding Plans**

For new facilities you will need to fill out an application first to receive a registration number (Online RPS402). For existing facilities: fill out a Shielding Plan coversheet and attach your payment. Please see fee schedule 902 KAR 100:12. Diagnostic facilities shielding plan reviews are $600 and linear accelerators reviews are $1,500. Checks need to be made out to the **Kentucky State Treasurer** and mailed into the branch at:

**Radiation Health Branch**

**275 East Main Street, HS1C-A**

**Frankfort, KY 40621**

**502-564-3700**

**502-564-1492 (fax)**

[**rpm@ky.gov**](mailto:rpm@ky.gov) **(Email)**

[Radiation Producing Machines Program - Cabinet for Health and Family Services (ky.gov)](https://www.chfs.ky.gov/agencies/dph/dphps/rhb/Pages/rpmp.aspx) **(Website)**

**(14) Electronic submission**

Plans can be emailed, and electronic invoices can be requested by emailing your request and referencing your registration # to [rpm@ky.gov](mailto:rpm@ky.gov).

[Radiation ePay (ky.gov)](https://prd.webapps.chfs.ky.gov/rad_epay/Default.aspx) (Epay link)

We value your input, comments or questions can be emailed to our general inquiry box at [rpm@ky.gov](https://kymsoffice.sharepoint.com/sites/chfs-kdph/Documents/rpm@ky.gov); or mailed into the branch at address listed above with attention to Radiation Producing Machines Supervisor.