



Michigan Department of Licensing and Regulatory Affairs
Radiation Safety Section



Dosimetry for Analytical and Industrial Radiographic X-Ray Machines

Type of Machine	Policy	Rationale
Open-beam analytical x-ray equipment, such as x-ray diffraction units. Equipment protected by an interlocked cover added to prevent unintentional exposure of part of a person's body to the primary beam is considered open-beam.	A dosimeter is required by R 333.5487.	Open-beam analytical x-ray systems allow a user to place some part of his or her body in the primary beam path during normal operation. Open-beam analytic units that are provided with interlocked enclosures are often intentionally defeated by operators for the purpose of aligning the apparatus. Thus, the potential for exposure to the hands is real, and dosimeters must be provided.
Class AA industrial radiographic installation of sufficient size to permit human occupancy	A dosimeter is required by R 333.5294(13).	Class AA installations of sufficient size to permit human occupancy are allowed an external exposure rate of up to 0.2 millisievert per hour at 5 centimeters from any accessible surface. At this rate, operators could receive a dose in excess of 10% of the annual occupational limit.
Class A, B, or C industrial radiographic installations.	A dosimeter is required by R 333.5296.	Permitted radiation exposure levels outside of these installations are higher than for class AA installations.
Class D industrial radiographic operations.	Both a long-term dosimeter and a short-term dosimeter (such as a pocket dosimeter) are required by R 333.5299(6) and (7).	Class D operations are done outside of a permanent shielded enclosure.