

**Dosimetry for Analytical and Baggage Inspection X-ray Machines**

<b>Type of Machine</b>	<b>Policy</b>	<b>Rationale</b>
<p>Closed-beam analytical x-ray equipment, such as x-ray fluorescence units. These units have to be closed-beam by manufacturer's design.</p>	<p>Facilities will not be cited for a violation of Rule 487 if dosimeters are not provided.</p>	<p>Our survey experiences with closed-beam analytical units, such as x-ray fluorescence equipment, have shown the radiation levels to be very low, even non-detectable, at the outside surfaces. Such manufacturer-designed, closed-beam units are more positively tamper-proof during use and do not allow the operator to bring their hands near the primary beam, so finger or wrist dosimeters may not be appropriate.</p>
<p>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.</p>	<p>A finger or wrist dosimeter is required by Rule 487.</p>	<p>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 propose of aligning the apparatus.. Thus, the potential for exposure to the hands is real, and dosimeters must be provided.</p>
<p>Cabinet x-ray systems designed for inspection of carry-on baggage at airline, railroad, and bus terminals or similar systems used for security inspections. This policy pertains to cabinet x-ray systems that meet all of the following:</p> <ul style="list-style-type: none"> <li>• Designed for baggage inspections or security inspections.</li> <li>• Designed to prohibit entry of humans or anatomical parts of humans. Provided with a tunnel or other device to prevent exposure to a person operating the machine or feeding/retrieving items to be inspected.</li> <li>• Certified by the manufacturer as meeting applicable FDA performance standards for cabinet x-ray systems.</li> </ul>	<p>Facilities will not be cited for a violation of Rule 303 if a dosimeter is not provided.</p>	<p>Our survey experiences with baggage inspection and security inspection units have shown the radiation levels to be very low at the outside surfaces.</p>