

2. Tests for proper operation of interlocks must be conducted and recorded at intervals not to exceed six months. Records of these tests shall be maintained for Agency inspection until disposal is authorized by the Agency.
 3. The registrant shall perform an evaluation of the radiation dose limits to determine compliance with 420-3-26-.03(14) (a), (b), and (c) of these rules, and 21 CFR 1020.40, Cabinet X-Ray Systems, at intervals not to exceed one year. Records of these evaluations shall be maintained for Agency inspection for two years after the evaluation.
- (b) Certified cabinet x-ray systems shall be maintained in compliance with 21 CFR 1020.40, Cabinet X-Ray Systems and no modification shall be made to the system unless prior Agency approval has been granted.
- (5) **Performance Requirements for Industrial Radiography Equipment.** Equipment used in industrial radiographic operations must meet the following minimum criteria:
- (a) Each radiographic exposure device, source assembly or sealed source, and all associated equipment must meet the requirements specified in ANSI N432-1980 "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography," (published as NBS Handbook 136, issued January 1981);
 - (b) In addition to the requirements specified in 420-3-26-.04(5)(a), the following requirements apply to radiographic exposure devices, source changers, source assemblies and sealed sources:
 1. The licensee shall ensure that each radiographic exposure device has attached to it a durable, legible, clearly visible label bearing the:
 - (i) Chemical symbol and mass number of the radionuclide in the device;
 - (ii) Activity and the date on which this activity was last measured;
 - (iii) Model or product code and serial number of the sealed source;

- (iv) Name of the manufacturer of the sealed source; and
 - (v) Licensee's name, address, and telephone number.
2. Radiographic exposure devices intended for use as Type B packages must meet the applicable transportation requirements of 420-3-26-.02 (21), 420-3-26-.02(23), and 420-3-26-.04(24).
 3. Modification of radiographic exposure devices, source changers, and source assemblies and associated equipment is prohibited, unless approved by the Agency or other approval body.
- (c) In addition to the requirements specified in 420-3-26-.04(5)(a) and (b), the following requirements apply to radiographic exposure devices, source assemblies, and associated equipment that allow the source to be moved out of the device for radiographic operations or to source changers;
1. The coupling between the source assembly and the control cable must be designed in such a manner that the source assembly will not become disconnected if cranked outside the guide tube. The coupling must be such that it cannot be unintentionally disconnected under normal and reasonably foreseeable abnormal conditions.
 2. The device must automatically secure the source assembly when it is cranked back into the fully shielded position within the device. This securing system may only be released by means of a deliberate operation on the exposure device.
 3. The outlet fittings, lock box, and drive cable fittings on each radiographic exposure device must be equipped with safety plugs or covers which must be installed during storage and transportation to protect the source assembly from water, mud, sand or other foreign matter.
 4. Each sealed source or source assembly must have attached to it or engraved on it, a durable, legible, visible label with the words:

"DANGER -- RADIOACTIVE."

The label may not interfere with the safe operation of the exposure device or associated equipment.

5. The guide tube must be able to withstand a crushing test that closely approximates the crushing forces that are likely to be encountered during use, and be able to withstand a kinking resistance test that closely approximates the kinking forces that are likely to be encountered during use.
 6. Guide tubes must be used when moving the source out of the device.
 7. An exposure head or similar device designed to prevent the source assembly from passing out of the end of the guide tube must be attached to the outermost end of the guide tube during industrial radiography operations.
 8. The guide tube exposure head connection must be able to withstand the tensile test for control units specified in ANSI N432-1980.
 9. Source changers must provide a system for ensuring that the source will not be accidentally withdrawn from the changer when connecting or disconnecting the drive cable to or from a source assembly.
- (d) All radiographic exposure devices and associated equipment in use after January 10, 1996, must comply with the requirements of this section; and
- (e) As an exception to rule 420-3-26-.04(5)(a), equipment used in industrial radiographic operations need not comply with § 8.9.2(c) of the Endurance Test in ANSI N432-1980, if the prototype equipment has been tested using a torque value representative of the torque that an individual using the radiography equipment can reasonably exert on the lever or crankshaft of the drive mechanism.
- (6) **Limits on External Radiation Levels From Storage Containers and Source Changers.** The maximum exposure rate limits for storage containers and source changers are 2 millisieverts (200 mrem) per hour at any exterior surface, and 0.1 millisieverts (10 mrem) per hour at 1 meter from any exterior surface with the sealed source in the shielded position.