

# OHIO DEPARTMENT OF HEALTH

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Director of Health

October 29, 2002

Josephine M. Piccone, Deputy Director  
Office of State and Tribal Programs  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Dear Mrs. Piccone:

Enclosed is a copy of the final revisions to the Ohio Department of Health Chapter 3701:1-48, Radioactive Material Standards - Industrial Radiographers effective October 20, 2002. The final regulations correspond to the following equivalent amendments to NRC's regulations: Licenses for Industrial Radiography and Radiation Safety Requirements for Industrial Radiography Operations (RATS ID # 1997-5).

We have incorporated the comments cited in your letter dated January 14, 2002 regarding our proposed version of these regulations.

We believe that adoption of these revisions satisfies the compatibility and health and safety categories established in the Office of State and Tribal Programs (STP) Procedure SA-200.

If you have any questions, please feel free to contact me at 614-644-2727.

Sincerely yours,

A handwritten signature in black ink that reads "Roger L. Suppes".

Roger L. Suppes, Chief  
Bureau of Radiation Protection

Enclosures:  
As stated

5P07

TABLE OF CONTENTS

10 CFR	3701:1-48-	TITLE OF RULE
		<b>GENERAL PROVISIONS</b>
34.1	02	PURPOSE AND SCOPE
34.3	01	DEFINITIONS
34.5	DELETE	INTERPRETATIONS
34.8	DELETE	INFORMATION COLLECTION REQUIREMENTS: OMB APPROVAL
		<b>SPECIFIC LICENSING PROVISIONS</b>
34.11	03	APPLICATION FOR A SPECIFIC LICENSE
34.13	04	SPECIFIC LICENSE FOR INDUSTRIAL RADIOGRAPHY
		<b>EQUIPMENT</b>
34.20	05	PERFORMANCE REQUIREMENTS FOR INDUSTRIAL RADIOGRAPHY EQUIPMENT
34.21	06	LIMITS ON EXTERNAL RADIATION LEVELS FROM STORAGE CONTAINERS AND SOURCE CHANGERS
34.23	07	LOCKING OF RADIOGRAPHIC EXPOSURE DEVICES, STORAGE CONTAINERS, AND SOURCE CHANGERS
34.25	08	RADIATION SURVEY INSTRUMENTS
34.27	09	LEAK TESTING AND REPLACEMENT OF SEALED SOURCES
34.29	10	QUARTERLY INVENTORY
34.31	11	INSPECTION AND MAINTENANCE OF RADIOGRAPHIC EXPOSURE DEVICES, TRANSPORT AND STORAGE CONTAINERS, ASSOCIATED EQUIPMENT, SOURCE CHANGERS, AND SURVEY INSTRUMENTS
34.33	12	PERMANENT RADIOGRAPHIC INSTALLATIONS
34.35	13	LABELING, STORAGE, AND TRANSPORTATION
		<b>RADIATION SAFETY REQUIREMENTS</b>

34.41	14	CONDUCTING INDUSTRIAL RADIOGRAPHIC OPERATIONS
34.42	15	RADIATION SAFETY OFFICER FOR INDUSTRIAL RADIOGRAPHY
34.43	16	TRAINING
34.45	17	OPERATING AND EMERGENCY PROCEDURES
34.46	18	SUPERVISION OF RADIOGRAPHERS' ASSISTANTS
34.47	19	PERSONNEL MONITORING
34.49	20	RADIATION SURVEYS
34.51	21	SURVEILLANCE
34.53	22	POSTING
	23	<b>RECORDKEEPING REQUIREMENTS</b>
34.61	(A)	RECORDS OF THE SPECIFIC LICENSE FOR INDUSTRIAL RADIOGRAPHY
34.63	(B)	RECORDS OF THE RECEIPT AND TRANSFER OF SEALED SOURCES
34.65	(C)	RECORDS OF RADIATION SURVEY INSTRUMENTS
34.67	(D)	RECORDS OF LEAK TESTING OF SEALED SOURCES AND DEVICES CONTAINING DEPLETED URANIUM
34.69	(E)	RECORDS OF QUARTERLY INVENTORY
34.71	(F)	UTILIZATION LOGS
34.73	(G)	RECORDS OF INSPECTION AND MAINTENANCE OF RADIOGRAPHIC EXPOSURE DEVICES, TRANSPORT AND STORAGE CONTAINERS, ASSOCIATED EQUIPMENT, SOURCE CHANGERS, AND SURVEY INSTRUMENTS
34.75	(H)	RECORDS OF ALARM SYSTEM AND ENTRANCE CONTROL CHECKS AT PERMANENT RADIOGRAPHIC INSTALLATIONS
34.79	(I)	RECORDS OF TRAINING AND CERTIFICATION
34.81	(J)	COPIES OF OPERATING AND EMERGENCY PROCEDURES
34.83	(K)	RECORDS OF PERSONNEL MONITORING PROCEDURES
34.85	(L)	RECORDS OF RADIATION SURVEYS
34.87	(M)	FORM OF RECORDS
34.89	(N)	LOCATION OF DOCUMENTS AND RECORDS





## Ohio Administrative Code

### Chapter 3701:1-48

#### Radioactive Material Standards - Industrial Radiographers

These files are in .PDF format. The free [Adobe Acrobat Viewer](#) is required to view them.

File Size	Rule No.	Title
10.53 KB	3701:1-48-01	Definitions
4.91 KB	3701:1-48-02	Purpose and scope
4.80 KB	3701:1-48-03	Application for a specific license
6.94 KB	3701:1-48-04	Specific license for industrial radiography
8.72 KB	3701:1-48-05	Performance requirements for industrial radiography equipm
37.30 KB	Appendix A	
4.84 KB	3701:1-48-06	Limits on external radiation levels from storage containers a changes
5.22 KB	3701:1-48-07	Locking of radiographic exposure devices, storage containers changes
5.32 KB	3701:1-48-08	Radiation survey instruments
7.36 KB	3701:1-48-09	Leak testing and replacement of sealed sources
4.85 KB	3701:1-48-10	Quarterly inventory
5.62 KB	3701:1-48-11	Inspection and maintenance of radiographic exposure device and storage containers, associated equipment, source chang survey instruments
5.53 KB	3701:1-48-12	Permanent radiographic installations
5.50 KB	3701:1-48-13	Labeling, storage, and transportation
5.24 KB	3701:1-48-14	Conducting industrial radiographic operations
7.81 KB	3701:1-48-15	Radiation safety officer for industrial radiography
9.35 KB	3701:1-48-16	Training
6.65 KB	Appendix A	
6.25 KB	3701:1-48-17	Operating and emergency procedures
5.09 KB	3701:1-48-18	Supervision of radiographer's assistants
7.73 KB	3701:1-48-19	Personnel monitoring
5.27 KB	3701:1-48-20	Radiation surveys
4.90 KB	3701:1-48-21	Surveillance
4.76 KB	3701:1-48-22	Posting
12.43 KB	3701:1-48-23	Record keeping requirements
6.14 KB	3701:1-48-24	Notifications



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[Home](#) | [Search](#) | [SiteMap](#)

3701:1-48-01      **Definitions.**

Terms defined in rule 3701:1-38-01 of the Administrative Code shall have the same meaning when used in this chapter except terms redefined within a given rule for use within that rule only, and additionally, as used in this chapter of the Administrative Code:

- (A) "Annual Refresher Safety Training" means a review conducted or provided by the licensee for its employees on radiation safety aspects of industrial radiography. The review may include, as appropriate, the results of internal inspections, new procedures or equipment, new or revised regulations, accidents or errors that have been observed, and should also provide opportunities for employees to ask safety questions.
- (B) "Associated Equipment" means equipment that is used in conjunction with a radiographic exposure device to make radiographic exposures that drives, guides, or comes in contact with the source, (e.g., guide tube, control tube, control (drive) cable, removable source stop, "j" tube and collimator) when it is used as an exposure head.
- (C) "Certifying Entity" means an independent certifying organization meeting the requirements in appendix A of rule 3701:1-48-16 of this chapter or equivalent United States nuclear regulatory commission or agreement state regulations meeting the requirements in appendix A of rule 3701:1-48-16 of this chapter.
- (D) "Collimator" means a radiation shield that is placed on the end of the guide tube or directly onto a radiographic exposure device to restrict the size of the radiation beam when the sealed source is cranked into position to make a radiographic exposure.
- (E) "Control (Drive) Cable" means the cable that is connected to the source assembly and used to drive the source to and from the exposure location.
- (F) "Control Drive Mechanism" means a device that enables the source assembly to be moved to and from the exposure device.
- (G) "Control Tube" means a protective sheath for guiding the control cable. The control tube connects the control drive mechanism to the radiographic exposure device.
- (H) "Exposure Head" means a device that locates the gamma radiography sealed source in the selected working position. (An exposure head is also known as a source stop.)
- (I) "Field Station" means a facility where licensed material may be stored or used and from which equipment is dispatched.

- (J) "Guide Tube (Projection Sheath)" means a flexible or rigid tube (i.e. "j" tube) for guiding the source assembly and the attached control cable from the exposure device to the exposure head. The guide tube may also include the connections necessary for attachment to the exposure device and to the exposure head.
- (K) "Hands-On Experience" means experience in all of those areas considered to be directly involved in the radiography process.
- (L) "Independent Certifying Organization" means an independent organization that meets all of the criteria of appendix A of rule 3701:1-48-16 of this chapter.
- (M) "Industrial Radiography (Radiography)" means an examination of the structure of materials by nondestructive methods, utilizing ionizing radiation to make radiographic images.
- (N) "Lay-Barge Radiography" means industrial radiography performed on any water vessel used for laying pipe.
- (O) "Offshore Platform Radiography" means industrial radiography conducted from a platform over a body of water.
- (P) "Permanent Radiographic Installation" means an enclosed shielded room, cell, or vault, not located at a temporary job site, in which radiography is performed.
- (Q) "Practical Examination" means a demonstration through practical application of the safety rules and principles in industrial radiography including use of all appropriate equipment and procedures.
- (R) "Radiation Safety Officer for Industrial Radiography" means an individual with the responsibility for the overall radiation safety program on behalf of the licensee and who meets the requirements of rule 3701:1-48-15 of the Administrative Code.
- (S) "Radiographer" means any individual who performs or who, in attendance at the site where the sealed source or sources are being used, personally supervises industrial radiographic operations and who is responsible to the licensee for assuring compliance with the requirements of Chapter 3748. of the Revised Code and rules promulgated thereunder in addition to the conditions of the license.
- (T) "Radiographer Certification" means written approval received from a certifying entity stating that an individual has satisfactorily met certain established radiation safety, testing, and experience criteria.
- (U) "Radiographer's Assistant" means any individual who, under the personal supervision (physical presence of the radiographer) of a radiographer, uses radiographic exposure devices, sealed sources or related handling tools, or radiation survey instruments in industrial radiography.
- (V) "Radiographic Exposure Device (also called a Camera, or a Projector)" means any instrument containing a sealed source fastened or contained therein, in which

the sealed source or shielding thereof may be moved, or otherwise changed, from a shielded to unshielded position for purposes of making a radiographic exposure.

- (W) "Radiographic Operations" means all activities associated with the presence of radioactive sources in a radiographic exposure device during use of the device or transport (except when being transported by a common or contract transport), to include surveys to confirm the adequacy of boundaries, setting up equipment and any activity inside restricted area boundaries.
- (X) "S-Tube" means a tube through which the radioactive source travels when inside a radiographic exposure device.
- (Y) "Shielded Position" means the location within the radiographic exposure device or source changer where the sealed source is secured and restricted from movement.
- (Z) "Source Assembly" means an assembly that consists of the sealed source and a connector that attaches the source to the control cable. The source assembly may also include a stop ball used to secure the source in the shielded position.
- (AA) "Source Changer" means a device designed and used for replacement of sealed sources in radiographic exposure devices, including those also used for transporting and storage of sealed sources.
- (BB) "Storage Area" means any location, facility, or vehicle which is used to store or to secure a radiographic exposure device, a storage container, or a sealed source when it is not in use and which is locked or has a physical barrier to prevent accidental exposure, tampering with, or unauthorized removal of the device, container, or source.
- (CC) "Storage Container" means a container in which sealed sources are secured and stored.
- (DD) "Temporary Job Site" means a location where radiographic operations are conducted and where licensed material may be stored other than those location(s) of use authorized on the license.
- (EE) "Underwater Radiography" means industrial radiography performed when the radiographic exposure device and/or related equipment are beneath the surface of the water.

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R.C. 119.032 review dates: 10/01/2007

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Certification

3701:1-48-01

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10/10/2002

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**3701:1-48-04      Specific license for industrial radiography.**

An application for a specific license for the use of licensed material in industrial radiography will be approved if the applicant meets the following requirements:

- (A) The applicant satisfies the general requirements specified in rule 3701:1-40-15 of the Administrative Code for byproduct material or NARM, as appropriate, and any special requirements contained in this chapter.
- (B) The applicant submits an adequate program for training radiographers and radiographers' assistants that meets the requirements of rule 3701:1-48-16 of the Administrative Code.
- (C) The applicant submits procedures for verifying and documenting the certification status of radiographers and for ensuring that the certification of individuals acting as radiographers remains valid.
- (D) The applicant submits written operating and emergency procedures as described in rule 3701:1-48-17 of the Administrative Code.
- (E) The applicant submits a description of a program for inspections of the job performance of each radiographer and radiographer's assistant at intervals not to exceed six months as described in rule 3701:1-48-16 of the Administrative Code.
- (F) The applicant submits a description of the applicant's overall organizational structure as it applies to the radiation safety responsibilities in industrial radiography, including specified delegation of authority and responsibility.
- (G) The applicant identifies and lists the qualifications of the individual(s) designated as the radiation safety officer for industrial radiography (rule 3701:1-48-15 of the Administrative Code) and potential designees responsible for ensuring that the licensee's radiation safety program is implemented in accordance with approved procedures.
- (H) If an applicant intends to perform leak testing of sealed sources or exposure devices containing depleted uranium (DU) shielding, the applicant must submit for approval the procedures for performing and the qualifications of the person(s) authorized to do the leak testing. If the applicant intends to analyze its own wipe samples, the application must include a description of the procedures to be followed. The description must include the:
  - (1) Instruments to be used;
  - (2) Methods of performing the analysis; and
  - (3) Pertinent experience of the person who will analyze the wipe samples.

- (I) If the applicant intends to perform "in-house" calibrations of survey instruments the applicant must submit acceptable methods to be used for approval and the relevant experience of the person(s) who will perform the calibrations. All calibrations must be performed according to the procedures described and at the intervals prescribed in rule 3701:1-48-08 of the Administrative Code.
- (J) The applicant identifies and describes the location(s) of all field stations and permanent radiographic installations.
- (K) The applicant identifies the locations where all records required by this rule and this chapter will be maintained.

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3701:1-48-05

**Performance requirements for industrial radiography equipment.**

Equipment used in industrial radiographic operations must meet the following minimum criteria:

(A)

- (1) Each radiographic exposure device, source assembly or sealed source, and all associated equipment must meet the requirements specified in 10 C.F.R. 34.20 (a)(1) as specified in appendix A to this rule.
- (2) Engineering analysis may be submitted by an applicant or licensee to demonstrate the applicability of previously performed testing on similar individual radiography equipment components. Upon review, the department may find this an acceptable alternative to actual testing of the component pursuant to the above referenced standard.

(B) In addition to the requirements specified in paragraph (A) of this rule, 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:
  - (a) Chemical symbol and mass number of the radionuclide in the device;
  - (b) Activity and the date on which this activity was last measured;
  - (c) Model (or product code) and serial number of the sealed source;
  - (d) Manufacturer's identity of the sealed source; and
  - (e) Licensee's name, address, and telephone number.
- (2) Radiographic exposure devices intended for use as Type B transport containers must meet the applicable requirements of Chapter 3701:1-50 of the Administrative Code.
- (3) Modification of radiographic exposure devices, source changers, and source assemblies and associated equipment is prohibited, unless the design of any replacement component, including source holder, source assembly, controls or guide tubes would not compromise the design safety features of the system.

(C) In addition to the requirements specified in paragraphs (A) and (B) of this rule, 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)
    - (a) Each sealed source or source assembly must have attached to it engraved on it, a durable, legible, visible label with the words: "DANGER-RADIOACTIVE."
    - (b) 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 10 C.F.R. 34.20 (c)(8) as specified in appendix A to this rule.
  - (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 rule.

(E) Notwithstanding paragraph (A)(1) of this rule, equipment used in industrial radiographic operations must meet the requirements as specified in 10 C.F.R. 34.20 (e) as specified in appendix A to this rule, if the prototype equipment has been tested using a torque value representative of the torque that an individual using the radiography equipment can realistically exert on the lever or crankshaft of the drive mechanism.

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(j) The applicant identifies and describes the location(s) of all field stations and permanent radiographic installations.

(k) The applicant identifies the locations where all records required by this part and other parts of this chapter will be maintained.

### Subpart C—Equipment

#### § 34.20 Performance requirements for industrial radiography equipment.

Equipment used in industrial radiographic operations must meet the following minimum criteria:

(a)(1) Each radiographic exposure device, source assembly or sealed source, and all associated equipment must meet the requirements specified in American National Standards Institute, N432-1980 "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography," (published as NBS Handbook 136, issued January 1981). This publication has been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. This publication may be purchased from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018 Telephone (212) 642-4900. Copies of the document are available for inspection at the Nuclear Regulatory Commission Library, 11545 Rockville Pike, Rockville, Maryland 20852. A copy of the document is also on file at the Office of the Federal Register, 800 North Capitol Street NW., suite 700, Washington, DC.

(2) Engineering analysis may be submitted by an applicant or licensee to demonstrate the applicability of previously performed testing on similar individual radiography equipment components. Upon review, the Commission may find this an acceptable alternative to actual testing of the component pursuant to the above referenced standard.

(b) In addition to the requirements specified in paragraph (a) of this section, 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) Manufacturer's identity of the sealed source; and

(v) Licensee's name, address, and telephone number.

(2) Radiographic exposure devices intended for use as Type B transport containers must meet the applicable requirements of 10 CFR part 71.

(3) Modification of radiographic exposure devices, source changers, and source assemblies and associated equipment is prohibited, unless the design of any replacement component, including source holder, source assembly, controls or guide tubes would not compromise the design safety features of the system.

(c) In addition to the requirements specified in paragraphs (a) and (b) of this section, 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.

## § 34.21

(4)(i) 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."

(ii) 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.

(e) Notwithstanding paragraph (a)(1) of this section, equipment used in industrial radiographic operations need not comply with § 8.9.2(c) of the Endurance Test in American National Standards Institute 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 realistically exert on the lever or crankshaft of the drive mechanism.

### § 34.21 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 millirem) per hour at any exterior surface, and 0.1 millisieverts (10 millirem)

## 10 CFR Ch. I (1-1-01 Edition)

per hour at 1 meter from any exterior surface with the sealed source in the shielded position.

### § 34.23 Locking of radiographic exposure devices, storage containers and source changers.

(a) Each radiographic exposure device must have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The exposure device and/or its container must be kept locked (and if a keyed-lock, with the key removed at all times) when not under the direct surveillance of a radiographer or a radiographer's assistant except at permanent radiographic installations as stated in § 34.51. In addition, during radiographic operations the sealed source assembly must be secured in the shielded position each time the source is returned to that position.

(b) Each sealed source storage container and source changer must have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. Storage containers and source changers must be kept locked (and if a keyed-lock, with the key removed at all times) when containing sealed sources except when under the direct surveillance of a radiographer or a radiographer's assistant.

### § 34.25 Radiation survey instruments.

(a) The licensee shall keep sufficient calibrated and operable radiation survey instruments at each location where radioactive material is present to make the radiation surveys required by this part and by 10 CFR part 20 of this chapter. Instrumentation required by this section must be capable of measuring a range from 0.02 millisieverts (2 millirem) per hour through 0.01 sievert (1 rem) per hour.

(b) The licensee shall have each radiation survey instrument required under paragraph (a) of this section calibrated—

(1) At intervals not to exceed 6 months and after instrument servicing, except for battery changes;

(2) For linear scale instruments, at two points located approximately one-

3701:1-48-06

**Limits on external radiation levels from storage  
containers and source changers.**

The maximum exposure rate limits for storage containers and source changers are two millisieverts (two hundred millirem) per hour at any exterior surface, and 0.1 millisieverts (ten millirem) per hour at one meter from any exterior surface with the sealed source in the shielded position.

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3701:1-48-07

**Locking of radiographic exposure devices, storage containers and source containers.**

- (A) Each radiographic exposure device must have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. The exposure device and/or its container must be kept locked (and if key-locked, with the key removed at all times) when not under the direct surveillance of a radiographer or a radiographer's assistant except at permanent radiographic installations as stated in rule 3701:1-48-21 of the Administrative Code. In addition, during radiographic operations the sealed source assembly must be secured in the shielded position each time the source is returned to that position.
- (B) Each sealed source storage container and source changer must have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position. Storage containers and source changers must be kept locked (and if key-locked, with the key removed at all times) when containing sealed sources except when under the direct surveillance of a radiographer or a radiographer's assistant.

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Prior Effective Dates: None



3701:1-48-09

**Leak testing and replacement of sealed sources.**

- (A) The replacement of any sealed source fastened to or contained in a radiographic exposure device and leak testing of any sealed source must be performed by persons authorized by the director, the United States nuclear regulatory commission, or an agreement state to do so.
- (B) The opening, repair, or modification of any sealed source must be performed by persons specifically authorized by the director, the United States nuclear regulatory commission, or an agreement state to do so.
- (C)
  - (1) Each licensee who uses a sealed source shall have the source tested for leakage at intervals not to exceed six months. The leak testing of the source must be performed using a method approved by the department, the United States nuclear regulatory commission or by an agreement state. The wipe sample should be taken from the nearest accessible point to the sealed source where contamination might accumulate. The wipe sample must be analyzed for radioactive contamination. The analysis must be capable of detecting the presence of one hundred eighty five Bq (0.005 microcuries) of radioactive material on the test sample and must be performed by a person specifically authorized by the director, the United States nuclear regulatory commission, or an agreement state to perform the analysis.
  - (2) The licensee shall maintain records of the leak tests in accordance with paragraph (D) of rule 3701:1-48-23 of the Administrative Code.
  - (3) Unless a sealed source is accompanied by a certificate from the transferor that shows that it has been leak tested within six months before the transfer, it may not be used by the licensee until tested for leakage. Sealed sources that are in storage and not in use do not require leak testing, but must be tested before use or transfer to another person if the interval of storage exceeds six months.
- (D) Any test conducted pursuant to paragraph (C) of this rule which reveals the presence of one hundred eighty five Bq (0.005 microcuries) or more of removable radioactive material must be considered evidence that the sealed source is leaking. The licensee shall immediately withdraw the equipment involved from use and shall have it decontaminated and repaired or disposed of in accordance with department rules. A report must be filed with the department, within five days of any test with results that exceed the threshold in this paragraph, describing the equipment involved, the test results, and the corrective action taken.
- (E) Each exposure device using depleted uranium (DU) shielding and an S tube configuration must be tested for DU contamination at intervals not to exceed twelve months. The analysis must be capable of detecting the presence of one

hundred eighty five Bq (0.005 microcuries) of radioactive material on the test sample and must be performed by a person specifically authorized by the director, the United States nuclear regulatory commission or an agreement state to perform the analysis. Should such testing reveal the presence of one hundred eighty five Bq (0.005 microcuries) or more of removable DU contamination, the exposure device must be removed from use until an evaluation of the wear of the S-tube has been made. Should the evaluation reveal that the S-tube is worn through, the device may not be used again. DU shielded devices do not have to be tested for DU contamination while in storage and not in use. Before using or transferring such a device, however, the device must be tested for DU contamination, if the interval of storage has exceeded twelve months. A record of the DU leak-test must be made in accordance with paragraph (D) of rule 3701:1-48-23 of the Administrative Code.

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3701:1-48-11

**Inspection and maintenance of radiographic exposure devices, transport and storage containers, associated equipment, source changers, and survey instruments.**

- (A) The licensee shall perform visual and operability checks on survey meters, radiographic exposure devices, transport and storage containers, associated equipment and source changers before use on each day the equipment is to be used to ensure that the equipment is in good working condition, that the sources are adequately shielded, and that required labeling is present. Survey instrument operability must be performed using check sources or other appropriate means. If equipment problems are found, the equipment must be removed from service until repaired.
- (B) Each licensee shall have written procedures for:
- (1) Inspection and routine maintenance of radiographic exposure devices, source changers, associated equipment, transport and storage containers, and survey instruments at intervals not to exceed three months or before the first use thereafter to ensure the proper functioning of components important to safety. Replacement components shall meet design specifications. If equipment problems are found, the equipment must be removed from service until repaired.
  - (2) Inspection and maintenance necessary to maintain the Type B packaging used to transport radioactive materials. The inspection and maintenance program must include procedures to assure that Type B packages are shipped and maintained in accordance with the certificate of compliance or other approval.
- (C) Records of equipment problems and of any maintenance performed under paragraphs (A) and (B) of this rule must be made in accordance with paragraph (G) of rule 3701:1-48-23 of the Administrative Code.

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3701:1-48-12

**Permanent radiographic installations.**

- (A) Each entrance that is used for personnel access to the high radiation area in a permanent radiographic installation must have either:
- (1) An entrance control of the type described in paragraph (A) of rule 3701:1-38-15 of the Administrative Code that reduces the radiation level upon entry into the area; or
  - (2) Both conspicuously visible and audible warning signals to warn of the presence of radiation. The visible signal must be actuated by radiation whenever the source is exposed. The audible signal must be actuated when an attempt is made to enter the installation while the source is exposed.
- (B) The alarm system must be tested for proper operation with a radiation source each day before the installation is used for radiographic operations. The test must include a check of both the visible and audible signals. Entrance control devices that reduce the radiation level upon entry (designated in paragraph (A)(1) of this rule) must be tested monthly. If an entrance control device or an alarm is operating improperly, it must be immediately labeled as defective and repaired within seven calendar days. The facility may continue to be used during this seven day period, provided the licensee implements the continuous surveillance requirements of rule 3701:1-48-21 of the Administrative Code and uses an alarming rate meter. Test records for entrance controls and audible and visual alarm must be maintained in accordance with paragraph (H) of rule 3701:1-48-23 of the Administrative Code.

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3701:1-48-13

**Labeling, storage, and transportation.**

- (A) The licensee may not use a source changer or a container to store licensed material unless the source changer or the storage container has securely attached to it a durable, legible, and clearly visible label bearing the standard trefoil radiation caution symbol conventional colors, i.e., magenta, purple or black on a yellow background, having a minimum diameter of twenty five millimeters, and the wording CAUTION\* RADIOACTIVE MATERIAL NOTIFY CIVIL AUTHORITIES (or "NAME OF COMPANY") \* \_\_\_\_\_ or "DANGER".
- (B) The licensee may not transport licensed material unless the material is packaged, and the package is labeled, marked, and accompanied with appropriate shipping papers in accordance with Chapter 3701:1-50 of the Administrative Code.
- (C) Locked radiographic exposure devices and storage containers must be physically secured to prevent tampering or removal by unauthorized personnel. The licensee shall store licensed material in a manner which will minimize danger from explosion or fire.
- (D) The licensee shall lock and physically secure the transport package containing licensed material in the transporting vehicle to prevent accidental loss, tampering, or unauthorized removal of the licensed material from the vehicle.

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3701:1-48-14

**Conducting industrial radiographic operations.**

- (A) Whenever radiography is performed at a location other than a permanent radiographic installation, the radiographer must be accompanied by at least one other qualified radiographer or an individual who has at a minimum met the requirements of paragraph (C) of rule 3701:1-48-16 of the Administrative Code. The additional qualified individual shall observe the operations and be capable of providing immediate assistance to prevent unauthorized entry. Radiography may not be performed if only one qualified individual is present.
- (B) All radiographic operations conducted at locations of use authorized on the license must be conducted in a permanent radiographic installation, unless specifically authorized by the department.
- (C) A licensee may conduct lay-barge, offshore platform, or underwater radiography only if procedures have been approved by the department, the United States nuclear regulatory commission or by an agreement state.

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3701:1-48-15

**Radiation safety officer for industrial radiography.**

The radiation safety officer for industrial radiography shall ensure that radiation safety activities are being performed in accordance with approved procedures and regulatory requirements in the daily operation of the licensee's program.

- (A) The minimum qualifications, training, and experience for radiation safety officers for industrial radiography are as follows:
  - (1) Completion of the training and testing requirements of paragraph (A) of rule 3701:1-48-16 of the Administrative Code;
  - (2) Two thousand hours of hands-on experience as a qualified radiographer in industrial radiographic operations; and
  - (3) Formal training in the establishment and maintenance of a radiation protection program.
- (B) The department will consider alternatives to paragraph (A)(2) of this rule when the radiation safety officer for industrial radiography has appropriate training and/or experience in the field of ionizing radiation, and in addition, has adequate formal training with respect to the establishment and maintenance of a radiation safety protection program.
- (C) The specific duties and authorities of the radiation safety officer for industrial radiography include, but are not limited to:
  - (1) Establishing and overseeing all operating, emergency, and ALARA procedures as required by Chapter 3701:1-38 of the Administrative Code, and reviewing them regularly to ensure that the procedures in use conform to current regulatory requirements, and to the license conditions.
  - (2) Overseeing and approving all phases of the training program for radiographic personnel, ensuring that appropriate and effective radiation protection practices are taught;
  - (3) Ensuring that required radiation surveys and leak tests are performed and documented in accordance with the regulations, including any corrective measures when levels of radiation exceed established limits;
  - (4) Ensuring that personnel monitoring devices are calibrated and used properly by occupationally-exposed personnel, that records are kept of the monitoring results, and that timely notifications are made as required by paragraph (C) of rule 3701:1-38-21 of the Administrative Code; and
  - (5) Ensuring that operations are conducted safely and to assume control for instituting corrective actions including stopping of operations when necessary.

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**3701:1-48-16 Training.**

- (A) The licensee may not permit any individual to act as a radiographer until the individual:

Has received training in the subjects in paragraph (G) of this rule, in addition to a minimum of two months of on-the-job training, and is certified through a radiographer certification program by a certifying entity. The director may accept a certification by the conference of radiation control program directors (CRCPD), the state of Texas industrial radiographer certification, certifying bodies approved by the United States nuclear regulatory commission, or any other certifying body that meets the criteria of appendix A to this rule and is approved by the director.

- (B) In addition, the licensee may not permit any individual to act as a radiographer until the individual:

- (1) Has received copies of and instruction in the requirements described in this chapter; Chapter 3701:1-38 and rule 3701:1-40-05 of the Administrative Code, in applicable regulations as specified in Chapter 3701:1-50 of the Administrative Code, in the Ohio license(s) under which the radiographer will perform industrial radiography; and the licensee's operating and emergency procedures;
- (2) Has demonstrated understanding of the licensee's license and operating and emergency procedures by successful completion of a written or oral examination covering this material;
- (3) Has received training in the use of the licensee's radiographic exposure devices, sealed sources, in the daily inspection of devices and associated equipment, and in the use of radiation survey instruments; and
- (4) Has demonstrated understanding of the use of radiographic exposure devices, sources, survey instruments and associated equipment described in paragraphs (B)(1) and (B)(3) of this rule by successful completion of a practical examination covering this material.

- (C) The licensee may not permit any individual to act as a radiographer's assistant until the individual:

- (1) Has received copies of and instruction in the requirements described in this chapter; Chapter 3701:1-38 and rule 3701:1-40-05 of the Administrative Code, in applicable regulations as specified in Chapter 3701:1-50 of the Administrative Code, in the Ohio license(s) under which the radiographer's assistant will perform industrial radiography, and the licensee's operating and emergency procedures;
- (2) Has developed competence to use, under the personal supervision of the radiographer, the radiographic exposure devices, sealed sources, associated

equipment, and radiation survey instruments that the assistant will use; and

- (3) Has demonstrated understanding of the instructions provided under paragraph (C)(1) of this rule by successfully completing a written test on the subjects covered and has demonstrated competence in the use of hardware described in paragraph (C)(2) of this rule by successful completion of a practical examination on the use of such hardware.
- (D) The licensee shall provide refresher safety training for each radiographer and radiographer's assistant at intervals not to exceed twelve months.
- (E) Except as provided in paragraph (E)(3) of this rule, the radiation safety officer for industrial radiography or qualified designee shall conduct an inspection program of the job performance of each radiographer and radiographer's assistant to ensure that the department's rules, license requirements, and the applicant's operating and emergency procedures are followed.
- (1) The inspection program must:
    - (a) Include observation of the performance of each radiographer and radiographer's assistant during an actual industrial radiographic operation, at intervals not to exceed six months; and
    - (b) Provide that, if a radiographer or a radiographer's assistant has not participated in an industrial radiographic operation for more than six months since the last inspection, the radiographer must demonstrate knowledge of the training requirements of paragraph (B)(3) of this rule and the radiographer's assistant must re-demonstrate knowledge of the training requirements of paragraph (C)(2) of this rule by a practical examination before these individuals can next participate in a radiographic operation.
  - (2) The department may consider alternatives in those situations where the individual serves as both radiographer and radiation safety officer for industrial radiography.
  - (3) In those operations where a single individual serves as both radiographer and radiation safety officer for industrial radiography, and performs all radiography operations, an inspection program is not required.
- (F) The licensee shall maintain records of the above training to include certification documents, written and practical examinations, refresher safety training and inspections of job performance in accordance with paragraph (J) of rule 3701:1-48-23 of the Administrative Code.
- (G) The licensee shall include the following subjects required in paragraph (A) of this rule:
- (1) Fundamentals of radiation safety including:

- (a) Characteristics of gamma radiation;
  - (b) Units of radiation dose and quantity of radioactivity;
  - (c) Hazards of exposure to radiation;
  - (d) Levels of radiation from licensed material; and
  - (e) Methods of controlling radiation dose (time, distance, and shielding);
- (2) Radiation detection instruments including:
- (a) Use, operation, calibration, and limitations of radiation survey instruments;
  - (b) Survey techniques; and
  - (c) Use of personnel monitoring equipment;
- (3) Equipment to be used including:
- (a) Operation and control of radiographic exposure equipment, remote handling equipment, and storage containers, including pictures or models of source assemblies (pigtailed);
  - (b) Storage, control, and disposal of licensed material; and
  - (c) Inspection and maintenance of equipment;
- (4) The requirements of pertinent federal and state regulations; and
- (5) Case histories of accidents in radiography.

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Appendix A

**I. Requirements for an Independent Certifying Organization**

An independent certifying organization shall:

1. Be an organization such as a society or association, whose members participate in, or have an interest in, the fields of industrial radiography;
2. Make its membership available to the general public nationwide that is not restricted because of race, color, religion, sex, age, national origin or disability;
3. Have a certification program open to nonmembers, as well as members;
4. Be an incorporated, nationally recognized organization, that is involved in setting national standards of practice within its fields of expertise;
5. Have an adequate staff, a viable system for financing its operations, and a policy- and decision-making review board;
6. Have a set of written organizational by-laws and policies that provide adequate assurance of lack of conflict of interest and a system for monitoring and enforcing those by-laws and policies;
7. Have a committee, whose members can carry out their responsibilities impartially, to review and approve the certification guidelines and procedures, and to advise the organization's staff in implementing the certification program;
8. Have a committee, whose members can carry out their responsibilities impartially, to review complaints against certified individuals and to determine appropriate sanctions;
9. Have written procedures describing all aspects of its certification program, maintain records of the current status of each individual's certification and the administration of its certification program;
10. Have procedures to ensure that certified individuals are provided due process with respect to the administration of its certification program, including the process of becoming certified and any sanctions imposed against certified individuals;
11. Have procedures for proctoring examinations, including qualifications for proctors. These procedures must ensure that the individuals proctoring each examination are not employed by the same company or corporation (or a wholly-owned subsidiary of such company or corporation) as any of the examinees;

12. Exchange information about certified individuals with the United States nuclear regulatory commission and other independent certifying organizations and/or agreement states and allow periodic review of its certification program and related records; and

13. Provide a description to the director of its procedures for choosing examination sites and for providing an appropriate examination environment.

## II. Requirements for Certification Programs

All certification programs must:

1. Require applicants for certification to (a) receive training in the topics set forth in paragraph (G) of rule 3701:1-48-16 of the Administrative Code or equivalent United States nuclear regulatory commission or agreement state regulations, and (b) satisfactorily complete a written examination covering these topics;

2. Require applicants for certification to provide documentation that demonstrates that the applicant has: (a) received training in the topics set forth in paragraph (G) of rule 3701:1-48-16 of the Administrative Code or equivalent United States nuclear regulatory commission or agreement state regulations; (b) satisfactorily completed a minimum period of on-the-job training; and (c) has received verification by an agreement state or a United States nuclear regulatory commission licensee that the applicant has demonstrated the capability of independently working as a radiographer;

3. Include procedures to ensure that all examination questions are protected from disclosure;

4. Include procedures for denying an application, revoking, suspending, and reinstating a certificate;

5. Provide a certification period of not less than 3 years nor more than 5 years;

6. Include procedures for renewing certifications and, if the procedures allow renewals without examination, require evidence of recent full-time employment and annual refresher training.

7. Provide a timely response to inquiries, by telephone or letter, from members of the public, about an individual's certification status.

## III. Requirements for Written Examinations

All examinations must be:

1. Designed to test an individual's knowledge and understanding of the topics listed in paragraph (G) of rule 3701:1-48-16 of the Administrative Code or equivalent United States nuclear regulatory commission or Agreement State requirements;

2. Written in a multiple-choice format;

3. Have test items drawn from a question bank containing psychometrically valid questions based on the material in paragraph (G) of rule 3701:1-48-16 of the Administrative Code.

**3701:1-48-17      Operating and emergency procedures.**

- (A) Operating and emergency procedures must include, as a minimum, instructions in the following:
- (1) Appropriate handling and use of licensed sealed sources and radiographic exposure devices so that no person is likely to be exposed to radiation doses in excess of the limits established in Chapter 3701:1-38 of the Administrative Code;
  - (2) Methods and occasions for conducting radiation surveys;
  - (3) Methods for controlling access to radiographic areas;
  - (4) Methods and occasions for locking and securing radiographic exposure devices, transport and storage containers and sealed sources;
  - (5) Personnel monitoring and the use of personnel monitoring equipment;
  - (6) Transporting sealed sources to field locations, including packing of radiographic exposure devices and storage containers in the vehicles, placarding of vehicles when needed, and control of the sealed sources during transportation (refer to Chapter 3701:1-50 of the Administrative Code);
  - (7) The inspection, maintenance, and operability checks of radiographic exposure devices, survey instruments, transport containers, and storage containers;
  - (8) Steps that must be taken immediately by radiography personnel in the event a pocket dosimeter is found to be off-scale or an alarm rate meter alarms unexpectedly;
  - (9) The procedure(s) for identifying and reporting defects and noncompliance, as required by rule 3701:1-38-23 of the Administrative Code;
  - (10) The procedure for notifying proper persons in the event of an accident;
  - (11) Minimizing exposure of persons in the event of an accident;
  - (12) Source recovery procedure if licensee will perform source recovery;
  - (13) Maintenance of records.
- (B) The licensee shall maintain copies of current operating and emergency procedures in accordance with paragraphs (J) and (N) of rule 3701:1-48-23 of the Administrative Code.

3701:1-48-17

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3701:1-48-18

**Supervision of radiographer's assistants.**

Whenever a radiographer's assistant uses radiographic exposure devices, associated equipment or sealed sources or conducts radiation surveys required by paragraph (B) of rule 3701:1-48-20 of the Administrative Code to determine that the sealed source has returned to the shielded position after an exposure, the assistant shall be under the personal supervision of a radiographer. The personal supervision must include:

- (A) The radiographer's physical presence at the site where the sealed sources are being used;
- (B) The availability of the radiographer to give immediate assistance if required; and
- (C) The radiographer's direct observation of the assistant's performance of the operations referred to in this rule.

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- (A) The licensee may not permit any individual to act as a radiographer or a radiographer's assistant unless, at all times during radiographic operations, each individual wears, on the trunk of the body, a direct reading dosimeter, an operating alarm rate meter, and either a film badge or a thermoluminescence dosimeter (TLD), or other National Voluntary Laboratory Accreditation Program (NVLAP) - approved whole body monitor that is processed and evaluated by an accredited NVLAP processor. At permanent radiography installations where other appropriate alarming or warning devices are in routine use, the wearing of an alarming rate meter is not required.
- (1) Pocket dosimeters must have a range from zero to two millisieverts (two hundred millirems) and must be recharged at the start of each shift. Electronic personal dosimeters may only be used in place of ion-chamber pocket dosimeters.
  - (2) Each film badge and TLD or other NVLAP - approved whole body monitor must be assigned to and worn by only one individual.
  - (3) Film badges must be replaced at periods not to exceed one month and TLDs or other NVLAP - approved whole body monitors processed and evaluated by an accredited NVLAP processor must be replaced at periods not to exceed three months.
  - (4) After replacement, each film badge, TLD or other NVLAP - approved whole body monitor must be processed as soon as possible.
- (B) Direct reading dosimeters such as pocket dosimeters or electronic personal dosimeters, must be read and the exposures recorded at the beginning and end of each shift, and records must be maintained in accordance with paragraph (K) of rule 3701:1-48-23 of the Administrative Code.
- (C) Pocket dosimeters, or electronic personal dosimeters, must be checked at periods not to exceed twelve months for correct response to radiation, and records must be maintained in accordance with paragraph (K) of rule 3701:1-48-23 of the Administrative Code. Acceptable dosimeters must read within plus or minus twenty percent of the true radiation exposure.
- (D) If an individual's pocket dosimeter is found to be off-scale, or if his or her electronic personal dosimeter reads greater than two millisieverts (two hundred millirems), and the possibility of radiation exposure cannot be ruled out as the cause, the individual's film badge or TLD or other NVLAP - approved whole body monitor must be sent for processing within twenty-four hours. In addition, the individual may not resume work associated with licensed material use until a determination of the individual's radiation exposure has been made. This determination must be made by the radiation safety officer for industrial radiography or the radiation safety officer for industrial radiography's designated qualified individual. The results of this determination must be included in the

records maintained in accordance with paragraph (K) of rule 3701:1-48-23 of the Administrative Code.

(E) If a film badge, TLD or other NVLAP - approved whole body monitor is lost or damaged, the worker shall cease work immediately until a replacement film badge, TLD or other NVLAP - approved whole body monitor is provided and the exposure is calculated for the time period from issuance to loss or damage of the film badge, TLD or other NVLAP - approved whole body monitor. The results of the calculated exposure and the time period for which the film badge, TLD or other NVLAP - approved whole body monitor was lost or damaged must be included in the records maintained in accordance with paragraph (K) of rule 3701:1-48-23 of the Administrative Code.

(F) Reports received from the film badge, TLD or other NVLAP - approved whole body monitor processor must be retained in accordance with paragraph (K) of rule 3701:1-48-23 of the Administrative Code.

(G) Each alarm rate meter must:

- (1) Be checked to ensure that the alarm functions properly (sounds) before using at the start of each shift;
- (2) Be set to give an alarm signal at a preset dose rate of five millisieverts per hr (five hundred millirem per hr); with an accuracy of plus or minus twenty percent of the true radiation dose rate;
- (3) Require special means to change the preset alarm function; and
- (4) Be calibrated at periods not to exceed twelve months for correct response to radiation. The licensee shall maintain records of alarm rate meter calibrations in accordance with paragraph (K) of 3701:1-48-23 of the Administrative Code.

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**3701:1-48-20      Radiation surveys.**

The licensee shall:

- (A) Conduct surveys with a calibrated and operable radiation survey instrument that meets the requirements of rule 3701:1-48-08 of the Administrative Code.
- (B) Using a survey instrument meeting the requirements of paragraph (A) of this rule, conduct a survey of the radiographic exposure device and the guide tube after each exposure when approaching the device or the guide tube. The survey must determine that the sealed source has returned to its shielded position before exchanging films, repositioning the exposure head, or dismantling equipment.
- (C) Conduct a survey of the radiographic exposure device with a calibrated radiation survey instrument any time the source is exchanged and whenever a radiographic exposure device is placed in a storage area (as defined in rule 3701:1-48-01 of the Administrative Code), to ensure that the sealed source is in its shielded position.
- (D) Maintain records in accordance with paragraph (L) of rule 3701:1-48-23 of the Administrative Code.

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3701:1-48-22      **Posting.**

All areas in which industrial radiography is being performed must be conspicuously posted as required by paragraph (B) of rule 3701:1-38-18 of the Administrative Code. Exceptions listed in paragraph (C) of rule 3701:1-38-18 of the Administrative Code do not apply to industrial radiographic operations.

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3701:1-48-23

**Record keeping requirements.**

- (A) Each licensee shall maintain a copy of its license, license conditions, documents incorporated by reference, and amendments to each of these items until superseded by new documents approved by the department, or until the department terminates the license.
- (B)
  - (1) Each licensee shall maintain records showing the receipts and transfers of all sealed sources and all devices using DU for shielding and retain each record for three years after it is made.
  - (2) These records must include the date, the name of the individual making the record, radionuclide, number of becquerels (curies) or mass (for DU), and manufacturer, model, and serial number of each sealed source and/or device, as appropriate.
- (C) Each licensee shall maintain records of the calibrations of its radiation survey instruments that are required under rule 3701:1-48-08 of the Administrative Code and retain each record for three years after it is made.
- (D) Each licensee shall maintain records of leak test results for sealed sources and also for devices containing DU. The results must be stated in units of becquerels (microcuries). The licensee shall retain each record for three years after it is made or until the source in storage is removed from storage.
- (E)
  - (1) Each licensee shall maintain records of the quarterly inventory of sealed sources and of devices containing depleted uranium as required by rule 3701:1-48-10 of the Administrative Code and retain each record for three years after it is made.
  - (2) The record must include the date of the inventory, name of the individual conducting the inventory, radionuclide, number of becquerels (curies) or mass (for DU) in each device, location of sealed source and/ or devices, and manufacturer, model, and serial number of each sealed source and/or device, as appropriate.
- (F)
  - (1) Each licensee shall maintain utilization logs showing for each sealed source the following information:
    - (a) A description, including the make, model, and serial number of the radiographic exposure device or transport or storage container in which the sealed source is located;

- (b) The identity and signature of the radiographer to whom assigned; and
  - (c) The plant or site where used and dates of use, including the dates removed and returned to storage.
- (2) The licensee shall retain the logs required by paragraph (F)(1) of this rule for three years after the log is made.
- (G)
  - (1) Each licensee shall maintain records specified in rule 3701:1-48-11 of the Administrative Code of equipment problems found in daily checks and quarterly inspections of radiographic exposure devices, transport and storage containers, associated equipment, source changers, and survey instruments; and retain each record for three years after it is made.
  - (2) The record must include the date of check or inspection, name of inspector, equipment involved, any problems found, and what repair and/or maintenance, if any, was done.
- (H) Each licensee shall maintain records of alarm system and entrance control device tests required under rule 3701:1-48-12 of the Administrative Code and retain each record for three years after it is made.
- (I) Each licensee shall maintain the following records (of training and certification) for three years after the record is made:
  - (1) Records of training of each radiographer and each radiographer's assistant. The record must include radiographer certification documents and verification of certification status, copies of written tests, dates of oral and practical examinations, and names of individuals conducting and receiving the oral and practical examinations; and
  - (2) Records of annual refresher safety training and semi-annual inspections of job performance for each radiographer and each radiographer's assistant. The records must list the topics discussed during the refresher safety training, the dates the annual refresher safety training was conducted, and names of the instructors and attendees. For inspections of job performance, the records must also include a list showing the items checked and any items of noncompliance observed by the radiation safety officer for industrial radiography.
- (J) Each licensee shall maintain a copy of current operating and emergency procedures until the department terminates the license. Superseded material must be retained for three years after the change is made.
- (K) Each licensee shall maintain the following exposure records specified in rule 3701:1-48-19 of the Administrative Code:

- (1) Direct reading dosimeter readings and yearly operability checks required by paragraphs (B) and (C) of rule 3701:1-48-19 of the Administrative Code for three years after the record is made.
  - (2) Records of alarm rate meter calibrations for three years after the record is made.
  - (3) Personnel dosimeter results received from the accredited National Voluntary Laboratory Accreditation Program (NVLAP) processor until the department terminates the license. Records of alarm rate meter calibrations for three years after the record is made.
  - (4) Records of estimates of exposures as a result of off-scale personal direct reading dosimeters, or lost, or damaged film badges, TLDs or other NVLAP - approved whole body monitor until the department terminates the license.
- (L) Each licensee shall maintain a record of each exposure device survey conducted before the device is placed in storage as specified in paragraph (C) of rule 3701:1-48-20 of the Administrative Code, if that survey is the last one performed in the workday. Each record must be maintained for three years after it is made.
- (M) Each record required by this part must be legible throughout the specified retention period. The record may be the original or a reproduced copy or a microform provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of reproducing a clear copy throughout the required retention period. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records, such as letters, drawings, and specifications, must include all pertinent information, such as stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with and loss of records.
- (N)
- (1) Each licensee shall maintain copies of records required by this part and other applicable parts of this chapter at the location specified in paragraph (K) of rule 3701:1-48-04 of the Administrative Code.
  - (2) Each licensee shall also maintain copies of the following documents and records sufficient to demonstrate compliance at each applicable field station and each temporary job site:
    - (a) The license authorizing the use of licensed material;
    - (b) A copy of Chapters 3701:1-38 and 3701:1-48 of the Administrative Code;
    - (c) Utilization records for each radiographic exposure device dispatched from that location as required by paragraph (F) of this rule;

- (d) Records of equipment problems identified in daily checks of equipment as required by paragraph (G)(1) of this rule;
- (e) Records of alarm system and entrance control checks required by paragraph (H) of this rule, if applicable;
- (f) Records of direct reading dosimeters such as pocket dosimeter and/or electronic personal dosimeters readings as required by paragraph (K) of this rule;
- (g) Operating and emergency procedures required by paragraph (J) of this rule;
- (h) Evidence of the latest calibration of the radiation survey instruments in use at the site, as required by paragraph (C) of this rule;
- (i) Evidence of the latest calibrations of alarm rate meters and operability checks of pocket dosimeters and/or electronic personal dosimeters as required by paragraph (K) of this rule;
- (j) Latest survey records required by paragraph (L) of this rule;
- (k) The shipping papers for the transportation of radioactive materials required by rule 3701:1-50-05 of the Administrative Code; and
- (l) When operating under reciprocity, a copy of the agreement state or United States nuclear regulatory commission license authorizing the use of licensed materials.

Effective: 10/20/2002

R.C. 119.032 review dates: 10/01/2007

CERTIFIED ELECTRONICALLY

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Certification

10/10/2002

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