

1 **216-RICR-40-20-10**

2 **TITLE 216 – DEPARTMENT OF HEALTH**

3 **CHAPTER 40 – PROFESSIONAL LICENSING & FACILITIES REGULATION**

4 **SUBCHAPTER 20 - RADIATION**

5 **PART 10 – LICENSES FOR INDUSTRIAL RADIOGRAPHY AND RADIATION**
6 **SAFETY REQUIREMENTS FOR INDUSTRIAL RADIOGRAPHIC OPERATIONS**

7 **10.1 Authority**

- 8 A. This Part is promulgated pursuant to the authority conferred under R.I. Gen.
9 Laws § [23-1.3-5\(f\)](#), as amended.
- 10 B. This Part provides establishes radiation safety requirements for persons utilizing
11 sources of radiation for industrial radiography operations.
- 12 C. Except for industrial radiation machines regulated pursuant to Part 6 of this
13 Subchapter, the regulations in this Part apply to all licensees or registrants who
14 use sources of radiation for industrial radiography; provided, however, that
15 nothing in this Part shall apply to the use of sources of radiation in the healing
16 arts.
- 17 D. The provisions and requirements of this Part are in addition to, and not in
18 substitution for, other requirements of this Subchapter.

19 **10.2 Incorporated Material**

- 20 A. Except as provided in this Part, the requirements of 10 CFR Part 34 (2018)
21 <https://www.nrc.gov/reading-rm/doc-collections/cfr/part034/> are incorporated by
22 reference, not including any further editions or amendments thereof and only to
23 the extent that the provisions therein are not inconsistent with this Part.
- 24 B. Notwithstanding the provisions of § 10.2(A) of this Part, §§ 34.5, 34.8, 34.11,
25 34.13, 34.41, 34.43, 34.63, 34.65, 34.67, 34.69, 34.71, 34.73, 34.75, 34.81,
26 34.89, 34.101, 34.111, 34.121 and 34.123 are not incorporated by reference.
- 27 C. Effect of incorporation of 10 CFR Part 34. To reconcile differences between this
28 Part and the incorporated sections of 10 CFR Part 34, the following words and
29 phrases shall be substituted for the language in 10 CFR Part 34 as follows:
- 30 1. Any reference to NRC or Commission shall be deemed to be a reference
31 to the Agency.

- 1 2. Any reference to NRC or agreement state shall be deemed to be a
2 reference to the Agency, NRC or agreement state.
- 3 3. Any reference to byproduct material shall be deemed to be a reference to
4 radioactive material.
- 5 4. Any notifications, reports or correspondence referenced in the
6 incorporated sections of 10 CFR Part 34 shall be directed to the Agency
7 using contact information specified in § 1.4 of this Part.
- 8 5. Any reference to licensee shall be deemed to include registrant.
- 9 6. Any reference to license shall be deemed to include registration.
- 10 7. Any reference to licensed shall be deemed to include registered.

11 **10.3 Definitions**

12 A. In addition to the definitions contained in 10 CFR § 34.3, whenever used in this
13 Part, the following terms shall be construed as follows:

14 “Act” means Title 23, Chapter 1.3 of the General Laws of the State of Rhode
15 Island entitled "Radiation Control".

16 “Agency” means Rhode Island Radiation Control Agency (RCA), Center for
17 Health Facilities Regulation - Radiation Control Program, Rhode Island
18 Department of Health.

19 “Radioactive material” means any material (solid, liquid, or gas) which emits
20 radiation spontaneously.

21 “Registrant” means any person who is registered with the Agency and is legally
22 obligated to register with the Agency pursuant to this Subchapter and the Act.

23 “Registration” means registration with the Agency pursuant to this Subchapter
24 and the Act.

25 “R.I. Gen. Laws” means the General Laws of Rhode Island, as amended.

26 **10.4 Specific Licensing Provisions**

27 A. In addition to the requirements set forth in § 7.6.2 of this Subchapter, a specific
28 license for use of sealed sources in industrial radiography will be issued if:

- 29 1. The applicant submits an adequate program for training radiographers and
30 radiographer's assistants that meets the requirements of § 10.6.3 of this
31 Part.

- 1 2. The applicant submits procedures for verifying and documenting the
2 certification status of radiographers and for ensuring that the certification
3 of individuals acting as radiographers remains valid.

- 4 3. The applicant submits written operating and emergency procedures as
5 described in § 10.6.4 of this Part.

- 6 4. The applicant submits a description of a program for inspections of the job
7 performance of each radiographer and radiographer's assistant at
8 intervals not to exceed six (6) months as described in § 10.6.3(E) of this
9 Part.

- 10 5. The applicant submits a description of the applicant's overall
11 organizational structure as it applies to the radiation safety responsibilities
12 in industrial radiography, including specified delegations of authority and
13 responsibility.

- 14 6. The applicant identifies and lists the qualifications of the individual(s)
15 designated as the RSO (§ 10.6.2 of this Part) and potential designees
16 responsible for ensuring that the licensee's radiation safety program is
17 implemented in accordance with approved procedures.

- 18 7. If an applicant intends to perform leak testing of sealed sources or
19 exposure devices containing depleted uranium (DU) shielding, the
20 applicant must describe the procedures for performing the test and the
21 qualifications of the person(s) authorized to do the leak testing. If the
22 applicant intends to analyze its own wipe samples, the application must
23 include a description of the procedures to be followed. The description
24 must include the:
 - 25 a. Instruments to be used;
 - 26 b. Method(s) of performing the analysis; and
 - 27 c. Pertinent experience of the person who will analyze the wipe
28 samples.

- 29 8. If the applicant intends to perform "in-house" calibrations of survey
30 instruments the applicant must describe methods to be used and the
31 relevant experience of the person(s) who will perform the calibrations. All
32 calibrations must be performed according to the procedures described and
33 at the intervals prescribed in § 10.5.4(A) of this Part.

- 34 9. The applicant identifies and describes the location(s) of all field stations
35 and permanent radiographic installations.

- 36 10. The applicant identifies the location(s) where all records required by this
37 Part and other Parts of this Subchapter will be maintained.

1 **10.5 Equipment**

2 **10.5.1 Performance Requirements for Industrial Radiography Equipment**

3 For the purpose of this Part, performance requirements for industrial radiography
4 equipment are defined by 10 CFR § 34.20.

5 **10.5.2 Limits on External Radiation Levels from Storage Containers and Source**
6 **Changers**

7 For the purpose of this Part, limits on external radiation levels from storage
8 containers and source changers are defined by 10 CFR § 34.21.

9 **10.5.3 Locking of Radiographic Exposure Devices, Storage Containers, and**
10 **Source Changers**

11 For the purpose of this Part, requirements for locking of radiographic exposure
12 devices, storage containers, and source changers are defined by 10 CFR §
13 34.23.

14 **10.5.4 Radiation Survey Instruments**

15 For the purpose of this Part, requirements for radiation survey instruments are
16 defined by 10 CFR § 34.25.

17 **10.5.5 Leak Testing and Replacement of Sealed Sources**

18 For the purpose of this Part, requirements for leak testing and replacement of
19 sealed sources are defined by 10 CFR § 34.27.

20 **10.5.6 Quarterly Inventory**

21 For the purpose of this Part, requirements for quarterly inventory are defined by
22 10 CFR § 34.29.

23 **10.5.7 Inspection and Maintenance of Radiographic Exposure Devices, Transport**
24 **And Storage Containers, Associated Equipment, Source Changers, and**
25 **Survey Instruments**

26 For the purpose of this Part, requirements for inspection and maintenance of
27 radiographic exposure devices, transport and storage containers, associated
28 equipment, source changers, and survey instruments are defined by 10 CFR §
29 34.31.

30 **10.5.8 Permanent Radiographic Installations**

31 For the purpose of this Part, requirements for permanent radiographic
32 installations are defined by 10 CFR § 34.33.

1 **10.5.9 Labeling, Storage, and Transportation**

2 For the purpose of this Part, requirements for labeling, storage, and transportation
3 are defined by 10 CFR § 34.35.

4 **10.6 Radiation Safety Requirements**

5 **10.6.1 Conducting Industrial Radiographic Operations**

- 6 A. Whenever radiography is performed at a location other than a permanent
7 radiographic installation, the radiographer must be accompanied by at least one
8 other qualified radiographer or an individual who has at a minimum met the
9 requirements of § 10.6.3(C) of this Part. The additional qualified individual shall
10 observe the operations and be capable of providing immediate assistance to
11 prevent unauthorized entry. Radiography may not be performed if only one
12 qualified individual is present.
- 13 B. All radiographic operations shall be conducted in a permanent radiographic
14 installation, unless otherwise specifically authorized by the Agency.
- 15 C. Except when physically impossible, collimators shall be used in industrial
16 radiographic operations that use radiographic exposure devices that allow the
17 source to be moved out of the device.
- 18 D. A licensee or registrant may conduct lay-barge, offshore platform, or underwater
19 radiography only if procedures have been approved by the Agency, the U.S.
20 Nuclear Regulatory Commission or another Agreement State.
- 21 E. At a job site, the following shall be supplied by the licensee or registrant:
- 22 1. At least one operable, calibrated survey instrument for each exposure
23 device or radiation machine in use;
- 24 2. A current whole body personnel monitor (TLD or film badge) for each
25 person performing radiographic operations;
- 26 3. An operable, calibrated pocket dosimeter with a range of zero to 2
27 millisieverts (200 mrem) for each person performing radiographic
28 operations;
- 29 4. An operable, calibrated, alarming ratemeter for each person performing
30 radiographic operations using a radiographic exposure device; and
- 31 5. The appropriate barrier ropes and signs.
- 32 F. Each radiographer at a job site shall have on their person a valid certification ID
33 card issued by a certifying entity.

1 G. Industrial radiographic operations shall not be performed if any of the items in §§
2 10.6.1(E) and 10.6.1(F) of this Part are not available at the job site or are
3 inoperable.

4 H. During an inspection, the Agency may terminate an operation if any of the items
5 in §§ 10.6.1(E) and 10.6.1(F) of this Part are not available or operable, or if the
6 required number of radiographic personnel are not present. Operations shall not
7 be resumed until all required conditions are met.

8 **10.6.2 Radiation Safety Officer for Industrial Radiography**

9 For the purpose of this Part, requirements for Radiation Safety Officer for
10 industrial radiography are defined by 10 CFR § 34.42.

11 **10.6.3 Training and Testing**

12 A. The licensee or registrant shall not permit any individual to act as a radiographer
13 until the individual:

14 1. Has received at least forty (40) hours of training in the subjects outlined in
15 § 10.6.3(G) of this Part, in addition to on-the-job training consisting of
16 hands-on experience under the supervision of a radiographer and is
17 certified through a radiographer certification program by a certifying entity
18 in accordance with the criteria specified in § 10.6.11 of this Part. The on-
19 the-job training shall include a minimum of two (2) months (320 hours) of
20 active participation in the performance of industrial radiography utilizing
21 radioactive material and/or one (1) month (160 hours) of active
22 participation in the performance of industrial radiography utilizing radiation
23 machines. Individuals performing industrial radiography utilizing
24 radioactive materials and radiation machines must complete both
25 segments of the on the job training (3 months or 480 hours); or

26 B. In addition, the licensee or registrant shall not permit any individual to act as a
27 radiographer until the individual:

28 1. Has received copies of and instruction in RCA regulations as contained in
29 this Part and applicable sections of Parts 1, 2, 7 and 12 of this
30 Subchapter, in applicable DOT regulations as referenced in 10 CFR 71, in
31 the license(s) and/or certificate(s) of registration under which the
32 radiographer will perform industrial radiography, and the licensee's or
33 registrant's operating and emergency procedures.

34 2. Has demonstrated understanding of the items in § 10.6.3(B)(1) of this Part
35 by successful completion of a written or oral examination.

36 3. Has received training in the use of the registrant's radiation machines or
37 the licensee's radiographic exposure devices, sealed sources, in the daily

- 1 inspection of devices and associated equipment, and in the use of
2 radiation survey instruments; and
- 3 4. Has demonstrated understanding of the use of the equipment described in
4 § 10.6.3(B)(3) of this Part by successful completion of a practical
5 examination.
- 6 C. The licensee or registrant shall not permit any individual to act as a
7 radiographer's assistant until the individual:
- 8 1. Has received copies of and instruction in RCA regulations as contained in
9 this Part and applicable sections of Parts 1, 2, 7 and 12 of this
10 Subchapter, in applicable DOT regulations as referenced in 10 CFR 71,
11 license(s) and/or certificate(s) of registration under which the
12 radiographer's assistant will perform industrial radiography, and the
13 licensee's or registrant's operating and emergency procedures;
- 14 2. Has demonstrated an understanding of items in § 10.6.3(B)(1) of this Part
15 by successful completion of a written or oral examination;
- 16 3. Has received training in the use of the registrant's radiation machines, or
17 the licensee's radiographic exposure devices, sealed sources, in the daily
18 inspection of devices and associated equipment, and in the use of
19 radiation survey instruments;
- 20 4. Has demonstrated understanding of the use of the equipment described in
21 § 10.6.3(B)(3) of this Part by successful completion of a practical
22 examination.
- 23 D. The licensee or registrant shall provide annual refresher safety training for each
24 radiographer and radiographer's assistant at intervals not to exceed twelve (12)
25 months.
- 26 E. Except as provided in § 10.6.3(E)(4) of this Part, the RSO or designee shall
27 conduct an inspection program of the job performance of each radiographer and
28 radiographer's assistant to ensure that the Agency's regulations, license and/or
29 certificate of registration requirements, and the applicant's operating and
30 emergency procedures are followed. The inspection program shall:
- 31 1. Include observation of the performance of each radiographer and
32 radiographer's assistant during an actual industrial radiographic operation,
33 at intervals not to exceed six (6) months; and
- 34 2. Provide that, if a radiographer or a radiographer's assistant has not
35 participated in an industrial radiographic operation for more than 6 months
36 since the last inspection, the radiographer must demonstrate knowledge of
37 the training requirements of § 10.6.3(B)(3) of this Part and the
38 radiographer's assistant must re-demonstrate knowledge of the training

- 1 requirements of § 10.6.3(C)(2) of this Part by a practical examination
2 before these individuals can next participate in a radiographic operation.
- 3 3. The Agency may consider alternatives in those situations where the
4 individual serves as both radiographer and RSO.
- 5 4. In those operations where a single individual serves as both radiographer
6 and RSO, and performs all radiography operations, an inspection program
7 is not required.
- 8 F. The licensee or registrant shall maintain records of the above training to include
9 certification documents, written and practical examinations, refresher safety
10 training and inspections of job performance in accordance with § 10.7.5 of this
11 Part.
- 12 G. The licensee or registrant shall include the following subjects required in §
13 10.6.3(A) of this Part:
- 14 1. Fundamentals of radiation safety including:
- 15 a. Characteristics of gamma and X-radiation;
- 16 b. Units of radiation dose and quantity of radioactivity;
- 17 c. Hazards of exposure to radiation;
- 18 d. Levels of radiation from sources of radiation; and
- 19 e. Methods of controlling radiation dose (time, distance, and
20 shielding);
- 21 2. Radiation detection instruments including:
- 22 a. Use, operation, calibration, and limitations of radiation survey
23 instruments;
- 24 b. Survey techniques; and
- 25 c. Use of personnel monitoring equipment.
- 26 3. Equipment to be used including:
- 27 a. Operation and control of radiographic exposure equipment, remote
28 handling equipment, and storage containers, including pictures or
29 models of source assemblies (pigtailed);
- 30 b. Operation and control of radiation machines;
- 31 c. Storage, control, and disposal of sources of radiation; and

- 1 d. Inspection and maintenance of equipment.
- 2 4. The requirements of pertinent Agency and Federal regulations; and
- 3 5. Case histories of accidents in radiography.
- 4 H. Records of radiographer certification maintained in accordance with § 10.7.5(A)
- 5 of this Part provide appropriate affirmation of certification requirements specified
- 6 in § 10.6.3(A) of this Part.

7 **10.6.4 Operating and Emergency Procedures**

8 For the purpose of this Part, requirements for operating and emergency

9 procedures are defined by 10 CFR § 34.45.

10 **10.6.5 Supervision of Radiographers' Assistants**

11 For the purpose of this Part, requirements for supervision of radiographers'

12 assistants are defined by 10 CFR § 34.46.

13 **10.6.6 Personnel Monitoring**

14 For the purpose of this Part, requirements for personnel monitoring are defined

15 by 10 CFR § 34.47.

16 **10.6.7 Radiation Surveys**

17 For the purpose of this Part, requirements for radiation surveys are defined by 10

18 CFR § 34.49.

19 **10.6.8 Surveillance**

20 For the purpose of this Part, surveillance requirements are defined by 10 CFR §

21 34.51.

22 **10.6.9 Posting**

23 For the purpose of this Part, posting requirements are defined by 10 CFR §

24 34.53.

25 **10.6.10 Reporting Requirements**

26 A. In addition to the reporting requirements specified under other sections of this

27 Subchapter, each licensee shall provide a written report to the Agency within

28 thirty (30) days of the occurrence of any of the following incidents involving

29 radiographic equipment:

- 30 1. Unintentional disconnection of the source assembly from the control cable;

- 1 2. Inability to retract the source assembly to its fully shielded position and
2 secure it in this position;
- 3 3. Failure of any component (critical to safe operation of the device) to
4 properly perform its intended function; or
- 5 4. An indicator on a radiation machine fails to show that radiation is being
6 produced, an exposure switch fails to terminate production of radiation
7 when turned to the off position, or a safety interlock fails to terminate x-ray
8 production.

9 B. The licensee or registrant shall include the following information in each report
10 submitted under § 10.6.10(A) of this Part:

- 11 1. A description of the equipment problem;
- 12 2. Cause of each incident, if known;
- 13 3. Name of the manufacturer and model number of equipment involved in the
14 incident;
- 15 4. Place, time and date of the incident;
- 16 5. Actions taken to establish normal operations;
- 17 6. Corrective actions taken or planned to prevent recurrence; and
- 18 7. Names and qualifications of personnel involved in the incident.

19 C. Reports of overexposure submitted under §1.17.3 of this Subchapter which
20 involve failure of safety components of radiography equipment must also include
21 the information specified in § 10.6.10(B) of this Part.

22 D. Any licensee or registrant conducting radiographic operations or storing sources
23 of radiation material at any location not listed on the license and/or certificate of
24 registration for a period in excess of one hundred and eighty (180) days in a
25 calendar year, shall notify the Agency prior to exceeding the one hundred and
26 eighty (180) days.

27 **10.6.11 Radiographer Certification**

28 For the purpose of this Part, requirements for radiographer certification are defined
29 by Appendix A to 10 CFR Part 34.

30 **10.7 Recordkeeping Requirements**

31 **10.7.1 Records Required at Temporary Jobsites**

- 1 A. Each licensee or registrant shall maintain current copies of the following
2 documents and records sufficient to demonstrate compliance at each applicable
3 field station and each temporary jobsite:
- 4 1. Appropriate license, certificate of registration or equivalent document
5 authorizing the use of sources of radiation.
 - 6 2. Operating and emergency procedures required by § 10.7.6 of this Part.
 - 7 3. A copy of this Subchapter.
 - 8 4. Survey records as required by § 10.7.8 of this Part, for the period of
9 operation at the site.
 - 10 5. Records of dosimeter readings as required by § 10.7.7 of this Part.
 - 11 6. Utilization log for each source of radiation dispatched from that location as
12 required by § 10.7.4 of this Part.
 - 13 7. Records of equipment problems identified in daily checks of equipment as
14 required by § 10.5.7(B) & (C) of this Part;
 - 15 8. Records of alarm system and entrance control checks required by §
16 10.5.8(B) of this Part, if applicable;
 - 17 9. Evidence of the latest calibration of the radiation survey instruments in use
18 at the site, as required by § 10.5.4(B) of this Part;
 - 19 10. Evidence of the latest calibrations of alarm ratemeters and operability
20 checks of dosimeters as required by § 10.7.7 of this Part;
 - 21 11. The shipping papers for the transportation of radioactive materials
22 required by 10 CFR 71.5; and
 - 23 12. When operating under reciprocity pursuant to § 7.10 of this Subchapter, a
24 copy of the applicable State license or certificate of registration, or U.S.
25 Nuclear Regulatory Commission license authorizing the use of sources of
26 radiation.

27 **10.7.2 Records of the Specific License for Industrial Radiography**

28 For the purpose of this Part, requirements for records of the specific license for
29 industrial radiography are defined by 10 CFR § 34.61.

30 **10.7.3 Records of the Receipt and Transfer of Sealed Sources**

31 For the purpose of this Part, requirements for records of the receipt and transfer
32 of sealed sources are defined by 10 CFR § 34.63.

1 **10.7.4 Utilization Logs**

2 A. Each licensee or registrant shall maintain utilization logs showing for each source
3 of radiation the following information:

- 4 1. A description, including the make, model and serial number of the
5 radiation machine or the radiographic exposure device, transport or
6 storage container in which the sealed source is located;
- 7 2. The identity or signature of the radiographer to whom assigned;
- 8 3. Locations where used and dates of use, including the dates removed and
9 returned to storage; and
- 10 4. For permanent radiographic installations, the dates each radiation
11 machine is energized.

12 B. The licensee or registrant shall retain the logs required by § 10.7.4(A) of this Part
13 for three (3) years after the log is made.

14 **10.7.5 Records of Training and Certification**

15 For the purpose of this Part, requirements for records of training and certification
16 are defined by 10 CFR § 34.79.

17 **10.7.6 Copies of Operating and Emergency Procedures**

18 Each licensee or registrant shall maintain a copy of current operating and
19 emergency procedures until the Agency terminates the license and/or certificate
20 of registration. Superseded material must be retained for three (3) years after
21 the change is made.

22 **10.7.7 Records of Personnel Monitoring Procedures**

23 For the purpose of this Part, requirements for records of personnel monitoring
24 procedures are defined by 10 CFR § 34.83.

25 **10.7.8 Records of Radiation Surveys**

26 For the purpose of this Part, requirements for records of radiation surveys are
27 defined by 10 CFR § 34.85.

28 **10.7.9 Form of Records**

29 For the purpose of this Part, requirements for form of records are defined by 10
30 CFR § 34.87.

31 **10.7.10 Location of Documents and Records**

- 1 A. Each licensee or registrant shall maintain copies of records required by this Part
- 2 and other applicable parts of this Subchapter at the location specified in §
- 3 10.4(A) of this Part.

- 4 B. Records shall also be maintained at each applicable field station and each
- 5 temporary jobsite, as specified by § 10.7.1 of this Part.