

Byproduct material	Col. I curies	Col. II curies
Neodymium-149 .....	10	.1
Nickel-59 .....	10	.1
Nickel-63 .....	1	.01
Nickel-65 .....	10	.1
Niobium-93m .....	1	.01
Niobium-95 .....	1	.01
Niobium-97 .....	100	1.
Osmium-185 .....	1	.01
Osmium-191m .....	100	1.
Osmium-191 .....	10	.1
Osmium-193 .....	10	.1
Palladium-103 .....	10	.1
Palladium-109 .....	10	.1
Phosphorus-32 .....	1	.01
Platinum-191 .....	10	.1
Platinum-193m .....	100	1.
Platinum-193 .....	10	.1
Platinum-197m .....	100	1
Platinum-197 .....	10	.1
Polonium-210 .....	.01	.0001
Potassium-42 .....	1	.01
Praseodymium-142 .....	10	.1
Praseodymium-143 .....	10	.1
Promethium-147 .....	1	.01
Promethium-149 .....	10	.1
Rhenium-186 .....	10	.1
Rhenium-188 .....	10	.1
Rhodium-103m .....	1,000	10.
Rhodium-105 .....	10	.1
Rubidium-86 .....	1	.01
Rubidium-87 .....	1	.01
Ruthenium-97 .....	100	1.
Ruthenium-103 .....	1	.01
Ruthenium-105 .....	10	.1
Ruthenium-106 .....	.1	.001
Samarium-151 .....	1	.01
Samarium-153 .....	10	.1
Scandium-46 .....	1	.01
Scandium-47 .....	10	.1
Scandium-48 .....	1	.01
Selenium-75 .....	1	.01
Silicon-31 .....	10	.1
Silver-105 .....	1	.01
Silver-110m .....	.1	.001
Silver-111 .....	10	.1
Sodium-24 .....	1	.01
Strontium-85m .....	1,000	10.
Strontium-85 .....	1	.01
Strontium-89 .....	1	.01
Strontium-90 .....	.01	.0001
Strontium-91 .....	10	.1
Strontium-92 .....	10	.1
Sulphur-35 .....	10	.1
Tantalum-182 .....	1	.01
Technetium-96 .....	10	.1
Technetium-97m .....	10	.1
Technetium-97 .....	10	.1
Technetium-99m .....	100	1.
Technetium-99 .....	1	.01
Tellurium-125m .....	1	.01
Tellurium-127m .....	1	.01
Tellurium-127 .....	10	.1
Tellurium-129m .....	1	.01
Tellurium-129 .....	100	1
Tellurium-131m .....	10	.1
Tellurium-132 .....	1	.01
Terbium-160 .....	1	.01
Thallium-200 .....	10	.1
Thallium-201 .....	10	.1
Thallium-202 .....	10	.1
Thallium-204 .....	1	.01
Thulium-170 .....	1	.01
Thulium-171 .....	1	.01

Byproduct material	Col. I curies	Col. II curies
Tin-113 .....	1	.01
Tin-125 .....	1	.01
Tungsten-181 .....	1	.01
Tungsten-185 .....	1	.01
Tungsten-187 .....	10	.1
Vanadium-48 .....	1	.01
Xenon-131m .....	1,000	10.
Xenon-133 .....	100	1.
Xenon-135 .....	100	1.
Ytterbium-175 .....	10	.1
Yttrium-90 .....	1	.01
Yttrium-91 .....	1	.01
Yttrium-92 .....	10	.1
Yttrium-93 .....	1	.01
Zinc-65 .....	1	.01
Zinc-69m .....	10	.1
Zinc-69 .....	100	1.
Zirconium-93 .....	1	.01
Zirconium-95 .....	1	.01
Zirconium-97 .....	1	.01
Any byproduct material other than alpha emitting byproduct material not listed above .....	.1	.001

(Sec. 201, Pub. L. 93-438; 88 Stat. 1242 (42 U.S.C. 5841))

[33 FR 14579, Sept. 28, 1968]

**PART 34—LICENSES FOR INDUSTRIAL RADIOGRAPHY AND RADIATION SAFETY REQUIREMENTS FOR INDUSTRIAL RADIOGRAPHIC OPERATIONS**

**Subpart A—General Provisions**

- Sec.
- 34.1 Purpose and scope.
- 34.3 Definitions.
- 34.5 Interpretations.
- 34.8 Information collection requirements: OMB approval.

**Subpart B—Specific Licensing Provisions**

- 34.11 Application for a specific license.
- 34.13 Specific license for industrial radiography.

**Subpart C—Equipment**

- 34.20 Performance requirements for industrial radiography equipment.
- 34.21 Limits on external radiation levels from storage containers and source changers.
- 34.23 Locking of radiographic exposure devices, storage containers, and source changers.
- 34.25 Radiation survey instruments.
- 34.27 Leak testing and replacement of sealed sources.
- 34.29 Quarterly inventory.
- 34.31 Inspection and maintenance of radiographic exposure devices, transport and

## Nuclear Regulatory Commission

## § 34.3

storage containers, associated equipment, source changers, and survey instruments.

- 34.33 Permanent radiographic installations.
- 34.35 Labeling, storage, and transportation.

### Subpart D—Radiation Safety Requirements

- 34.41 Conducting industrial radiographic operations.
- 34.42 Radiation Safety Officer for industrial radiography.
- 34.43 Training.
- 34.45 Operating and emergency procedures.
- 34.46 Supervision of radiographers' assistants.
- 34.47 Personnel monitoring.
- 34.49 Radiation surveys.
- 34.51 Surveillance.
- 34.53 Posting.

### Subpart E—Recordkeeping Requirements

- 34.61 Records of the specific license for industrial radiography.
- 34.63 Records of the receipt and transfer of sealed sources.
- 34.65 Records of radiation survey instruments.
- 34.67 Records of leak testing of sealed sources and devices containing depleted uranium.
- 34.69 Records of quarterly inventory.
- 34.71 Utilization logs.
- 34.73 Records of inspection and maintenance of radiographic exposure devices, transport and storage containers, associated equipment, source changers, and survey instruments.
- 34.75 Records of alarm system and entrance control checks at permanent radiographic installations.
- 34.79 Records of training and certification.
- 34.81 Copies of operating and emergency procedures.
- 34.83 Records of personnel monitoring procedures.
- 34.85 Records of radiation surveys.
- 34.87 Form of records.
- 34.89 Location of documents and records.

### Subpart F—Notifications

- 34.101 Notifications.

### Subpart G—Exemptions

- 34.111 Applications for exemptions.

### Subpart H—Violations

- 34.121 Violations.
- 34.123 Criminal penalties.

#### APPENDIX A TO PART 34—RADIOGRAPHER CERTIFICATION

AUTHORITY: Secs. 81, 161, 182, 183, 68 Stat. 935, 948, 953, 954, as amended (42 U.S.C. 2111,

2201, 2232, 2233); sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841); sec. 1704, 112 Stat. 2750 (44 U.S.C. 3504 note). Section 34.45 also issued under sec. 206, 88 Stat. 1246 (42 U.S.C. 5846).

SOURCE: 62 FR 28963, May 28, 1997, unless otherwise noted.

## Subpart A—General Provisions

### § 34.1 Purpose and scope.

This part prescribes requirements for the issuance of licenses for the use of sealed sources containing byproduct material and radiation safety requirements for persons using these sealed sources in industrial radiography. The provisions and requirements of this part are in addition to, and not in substitution for, other requirements of this chapter. In particular, the requirements and provisions of 10 parts 19, 20, 21, 30, 71, 150, 170, and 171 of this chapter apply to applications and licenses subject to this part. This rule does not apply to medical uses of byproduct material.

### § 34.3 Definitions.

*ALARA* (acronym for “as low as is reasonably achievable”) means making every reasonable effort to maintain exposures to radiation as far below the dose limits specified in 10 CFR part 20 as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.

*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.