

## **TITLE 216 – DEPARTMENT OF HEALTH**

### **CHAPTER 40 – PROFESSIONAL LICENSING AND FACILITY REGULATION**

#### **SUBCHAPTER 20 – RADIATION**

##### **PART 11 – Licenses for Well Logging and Radiation Safety Requirements for Well Logging Operations**

### **11.1 Authority**

- A. This Part is promulgated pursuant to the authority conferred under R.I. Gen. Laws § 23-1.3-5.
- B. This Part prescribes requirements for the issuance of a license or registration authorizing the use of sources of radiation in well logging in a single well. This Part also prescribes radiation safety requirements for persons using sources of radiation in these operations.
- C. This Part applies to all licensees or registrants who use sources of radiation for well logging operations including mineral logging, radioactive markers, or subsurface tracer studies.
- D. The requirements set out in this Part do not apply to the issuance of a license or registration authorizing the use of sources of radiation in tracer studies involving multiple wells, such as field flooding studies, or to the use of sources of radiation auxiliary to well logging but not lowered into wells.
- E. The provisions and requirements of this Part are in addition to, and not in substitution for, other requirements of this [Subchapter](#).

### **11.2 Incorporated Material**

- A. Except as provided in this Part, the requirements of 10 C.F.R. Part 39 (2021) are incorporated by reference, not including any further editions or amendments thereof and only to the extent that the provisions therein are not inconsistent with this Part.
- B. Notwithstanding the provisions of § 11.2(A) of this Part, 10 C.F.R. §§ 39.5, 39.8, 39.11, 39.13, 39.17, 39.51, 39.53, 39.55, 39.73, 39.75, 39.77, 39.91, 39.101 and 39.103 are not incorporated by reference.
- C. Effect of incorporation of 10 C.F.R. Part 39. To reconcile differences between this Part and the incorporated sections of 10 C.F.R. Part 39, the following words and phrases shall be substituted for the language in 10 C.F.R. Part 39 as follows:

1. Any reference to NRC or Commission shall be deemed to be a reference to the Agency.
2. Any reference to NRC or Agreement State shall be deemed to be a reference to the Agency, NRC or Agreement State.
3. Any reference to byproduct material shall be deemed to be a reference to radioactive material.
4. Any notifications, reports or correspondence referenced in the incorporated sections of 10 C.F.R. Part 39 shall be directed to the Agency using contact information specified in § [1.4](#) of this Subchapter.

### **11.3 Definitions**

- A. In addition to the definitions contained in 10 C.F.R. § 39.2, whenever used in this Part, the following terms shall be construed as follows:
1. “Act” means R.I. Gen. Laws Chapter 23-1.3 entitled "Radiation Control."
  2. “Agency” means Rhode Island Radiation Control Agency (RCA), Center for Health Facilities Regulation – Radiation Control Program, Rhode Island Department of Health.
  3. “Annual” means an interval not to exceed twelve (12) months.
  4. “Radioactive material” means any material (solid, liquid, or gas) which emits radiation spontaneously.

### **11.4 Specific Licensing Requirements**

#### **11.4.1 Specific License for Well Logging**

- A. In addition to the requirements set forth in § [7.6.2](#) of this Subchapter, a specific license for use of sources of radiation in well logging will be issued if the applicant submits to the Agency:
1. A description of its program for training logging supervisors and logging assistants and which specifies:
    - a. Initial training;
    - b. On-the-job training;
    - c. Annual safety reviews provided by the licensee;
    - d. Means the applicant will use to demonstrate the logging supervisor's knowledge and understanding of and ability to comply

with the Agency's Regulations and licensing requirements and the applicant's operating and emergency procedures; and

- e. Means the applicant will use to demonstrate the logging assistant's knowledge and understanding of and ability to comply with the applicant's operating and emergency procedures.
- 2. Written operating and emergency procedures as described in § 11.6.2 of this Part or an outline or summary of the procedures that includes the important radiation safety aspects of the procedures.
- 3. A program for annual inspections of the job performance of each logging supervisor to ensure that the Agency's Regulations, license requirements, and the applicant's operating and emergency procedures are followed.
  - a. Inspection records must be retained for three (3) years after each annual internal inspection.
- 4. A description of its overall organizational structure as it applies to the radiation safety responsibilities in well logging, including specified delegations of authority and responsibility.
- 5. If an applicant wants to perform leak testing of sealed sources, identify the manufacturers and the model numbers of the leak test kits to be used.
- 6. If the applicant wants to analyze its own wipe samples, a description of the procedures to be followed. The description must include:
  - a. Instruments to be used;
  - b. Methods of performing the analysis; and
  - c. Pertinent experience of the person who will analyze the wipe samples.

#### **11.4.2 Agreement with Well Owner or Operator**

For the purpose of this Part, requirements for an agreement with well owner or operator are defined by 10 C.F.R. § 39.15.

### **11.5 Equipment**

#### **11.5.1 Labels, Security, and Transportation Precautions**

For the purpose of this Part, requirements for labels, security, and transportation precautions are defined by 10 C.F.R. § 39.31.

#### **11.5.2 Radiation Survey Instruments**

For the purpose of this Part, requirements for radiation survey instruments are defined by 10 C.F.R. § 39.33.

#### **11.5.3 Leak Testing of Sealed Sources**

For the purpose of this Part, requirements for leak testing of sealed sources are defined by 10 C.F.R. § 39.35.

#### **11.5.4 Physical Inventory**

For the purpose of this Part, requirements for physical inventory are defined by 10 C.F.R. § 39.37.

#### **11.5.5 Utilization Records**

For the purpose of this Part, requirements for utilization records are defined by 10 C.F.R. § 39.39.

#### **11.5.6 Design and Performance Criteria for Sealed Sources Used in Downhole Operations**

For the purpose of this Part, requirements for design and performance criteria for sealed sources used in downhole operations are defined by 10 C.F.R. § 39.41.

#### **11.5.7 Inspection, Maintenance, and Opening of a Source or Source Holder**

For the purpose of this Part, requirements for inspection, maintenance, and opening of a source or source holder are defined by 10 C.F.R. § 39.43.

#### **11.5.8 Subsurface Tracer Studies**

For the purpose of this Part, requirements for subsurface tracer studies are defined by 10 C.F.R. § 39.45.

#### **11.5.9 Radioactive Markers**

For the purpose of this Part, requirements for radioactive markers are defined by 10 C.F.R. § 39.47.

#### **11.5.10 Uranium Sinker Bars**

For the purpose of this Part, requirements for uranium sinker bars are defined by 10 C.F.R. § 39.49.

#### **11.5.11 Use of a Sealed Source in a Well Without Surface Casing**

A licensee may use a sealed source in a well without a surface casing for protecting fresh water aquifers only if the licensee follows a procedure for

reducing the probability of the source becoming lodged in the well. The procedure shall be approved by the Agency.

#### **11.5.12 Energy Compensation Source**

- A. A licensee may use an energy compensation source (ECS) which is contained within a logging tool, or other tool components, only if the ECS contains quantities of licensed material not exceeding three and seven tenths (3.7) MBq (one hundred (100) microcuries).
  - 1. For well logging applications with a surface casing for protecting fresh water aquifers, use of the ECS is only subject to the requirements of §§ 11.5.3, 11.5.4 and 11.5.5 of this Part.
  - 2. For well logging applications without a surface casing for protecting fresh water aquifers, use of the ECS is only subject to the requirements of §§ 11.5.1, 11.5.3, 11.5.4, 11.5.5, 11.5.11 and 11.7.4 of this Part.

#### **11.5.13 Tritium Neutron Generator Target Source**

- A. Use of a tritium neutron generator target source, containing quantities not exceeding one thousand one hundred ten (1,110) MBq (thirty (30) curies) and in a well with a surface casing to protect fresh water aquifers, is subject to the requirements of this Part except §§ 11.5.1, 11.5.6, and 11.7.4 of this Part.
- B. Use of a tritium neutron generator target source, containing quantities exceeding one thousand one hundred ten (1,110) MBq (thirty (30) curies) or in a well without a surface casing to protect fresh water aquifers, is subject to the requirements of this Part except § 11.5.6 of this Part.

#### **11.5.14 Handling Tools**

The licensee shall provide and require the use of tools that will assure remote handling of sealed sources other than low-activity calibration sources.

#### **11.5.15 Particle Accelerators**

No licensee or registrant shall permit above-ground testing of particle accelerators, designed for use in well-logging, which results in the production of radiation, except in areas or facilities controlled or shielded so that the requirements of §§ [1.7.1](#) and [1.8.1](#) of this Subchapter, as applicable, are met.

### **11.6 Radiation Safety Requirements**

#### **11.6.1 Training**

For the purpose of this Part, training requirements are defined by 10 C.F.R. § 39.61.

### **11.6.2 Operating and Emergency Procedures**

For the purpose of this Part, requirements for operating and emergency procedures are defined by 10 C.F.R. § 39.63.

### **11.6.3 Personnel Monitoring**

For the purpose of this Part, requirements for personnel monitoring are defined by 10 C.F.R. § 39.65.

### **11.6.4 Radiation Surveys**

For the purpose of this Part, requirements for radiation surveys are defined by 10 C.F.R. § 39.67.

### **11.6.5 Radioactive Contamination Control**

For the purpose of this Part, requirements for radioactive contamination control are defined by 10 C.F.R. § 39.69.

## **11.7 Security, Records and Notifications**

### **11.7.1 Security**

For the purpose of this Part, security requirements are defined by 10 C.F.R. § 39.71.

### **11.7.2 Documents and Records Required at Field Stations**

- A. Each licensee or registrant shall maintain, for inspection by the Agency, the following documents and records for the specific devices and sources used at the field station:
1. Appropriate license, certificate of registration, or equivalent document;
  2. Operating and emergency procedures;
  3. Applicable Regulations;
  4. Records of the latest survey instrument calibrations pursuant to § 11.5.2 of this Part;
  5. Records of the latest leak test results pursuant to § 11.5.3 of this Part;
  6. Records of quarterly inventories required pursuant to § 11.5.4 of this Part;
  7. Utilization records required pursuant to § 11.5.5 of this Part;

8. Records of inspection and maintenance required pursuant to § 11.5.7 of this Part;
9. Survey records required pursuant to § 11.6.4 of this Part; and
10. Training records required pursuant to § 11.6.1 of this Part.

### **11.7.3 Documents and Records Required at Temporary Jobsites**

- A. Each licensee or registrant conducting operations at a temporary jobsite shall have the following documents and records available at that site for inspection by the Agency:
  1. Operating and emergency procedures;
  2. Survey records required pursuant to § 11.6.4 of this Part; for the period of operation at the site;
  3. Evidence of current calibration for the radiation survey instruments in use at the site;
  4. When operating in Rhode Island under reciprocity, a copy of the appropriate license, certificate of registration, or equivalent document(s); and
  5. Shipping papers for the transportation of radioactive material.

### **11.7.4 Notification of Incidents, Abandonment, and Lost Sources**

- A. Notification of incidents and sources lost in other than downhole logging operations shall be made in accordance with appropriate provisions of § [1.17.2](#) of this Subchapter.
- B. Whenever a sealed source or device containing radioactive material is lodged downhole, the licensee shall:
  1. Monitor at the surface for the presence of radioactive contamination with a radiation survey instrument or logging tool during logging tool recovery operations; and
  2. Notify the Agency immediately by telephone and subsequently, within thirty (30) days, by confirmatory letter if the licensee knows or has reason to believe that a sealed source has been ruptured. This letter shall identify the well or other location, describe the magnitude and extent of the escape of radioactive material, assess the consequences of the rupture, and explain efforts planned or being taken to mitigate these consequences.

- C. When it becomes apparent that efforts to recover the radioactive source will not be successful, the licensee shall:
1. Advise the well-operator of the regulations of the Agency regarding abandonment and an appropriate method of abandonment, which shall include:
    - a. The immobilization and sealing in place of the radioactive source with a cement plug,
    - b. A means to prevent inadvertent intrusion on the source (e.g., the setting of a whipstock or other deflection device), unless the source is not accessible to any subsequent drilling operations, and
    - c. The mounting of a permanent identification plaque, at the surface of the well, containing the appropriate information required by § 11.7.4 of this Part;
  2. Notify the Agency, by telephone, of the circumstances that resulted in the inability to retrieve the source, and:
    - a. Obtain Agency approval to implement abandonment procedures; or
    - b. That the licensee implemented abandonment before receiving Agency approval because the licensee believed there was an immediate threat to public health and safety; and
  3. File a written report with the Agency within thirty (30) days of the abandonment. The licensee shall send a copy of the report to the State agency(s) that issued permits or otherwise approved of the drilling operation. The report shall contain the following information:
    - a. Date of occurrence and a brief description of attempts to recover the source,
    - b. A description of the irretrievable radioactive source involved, including radionuclide, quantity, and chemical and physical form,
    - c. Surface location and identification of well,
    - d. Results of efforts to immobilize and set the source in place,
    - e. Depth of the radioactive source,
    - f. Depth of the top of the cement plug,
    - g. Depth of the well,



- h. The immediate threat to public health and safety justification for implementing abandonment if prior Agency approval was not obtained in accordance with § 11.7.4 of this Part.
    - i. Any other information, such as a warning statement, contained on the permanent identification plaque; and
    - j. The names of State and Federal agencies receiving a copy of this report.
  - D. Whenever a sealed source containing radioactive material is abandoned downhole, the licensee shall provide a permanent identification plaque for mounting at the surface of the well, unless the mounting of the plaque is not practical. This plaque shall:
    - 1. Be at least seventeen (17) cm (seven inches (7")) square and three (3) mm (one eighth of one inch (1/8")) thick and be constructed of long-lasting material, such as stainless steel, brass, bronze, or monel; and
    - 2. Contain the following engraved on its face:
      - a. The word "CAUTION;"
      - b. The radiation symbol without the conventional color requirement;
      - c. The date of abandonment;
      - d. The name of the well operator or well owner;
      - e. The well name and well identification number(s) or other designation;
      - f. The sealed source(s) by radionuclide and quantity of activity;
      - g. The source depth and the depth to the top of the plug; and
      - h. An appropriate warning, depending on the specific circumstances of each abandonment. Appropriate warnings may include:
        - (1) "Do not drill below plug back depth;"
        - (2) "Do not enlarge casing;" or
        - (3) "Do not re-enter the hole," followed by the words, "before contacting the Rhode Island Radiation Control Agency."
  - E. The licensee shall immediately notify the Agency by telephone and subsequently by confirming letter if the licensee knows or has reason to believe that radioactive material has been lost in or to an underground potable aquifer. Such notice shall

designate the well location and shall describe the magnitude and extent of loss of radioactive material, assess the consequences of such loss, and explain efforts planned or being taken to mitigate these consequences.

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**TITLE 216 - DEPARTMENT OF HEALTH**

**CHAPTER 40 - PROFESSIONAL LICENSING AND FACILITY REGULATION**

**SUBCHAPTER 20 - RADIATION**

**PART 11 - LICENSES FOR WELL LOGGING AND RADIATION SAFETY  
REQUIREMENTS FOR WELL LOGGING OPERATIONS (216-RICR-40-20-11)**

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