Section I. OVERVIEW

1.0 General Provisions

1.1 Purpose.
This rule establishes requirements for the protection of public health and safety as related to radiation sources and implements the requirements of 18 V.S.A. §§ 1652 and 1653.

1.2 Scope.

1.2.1 This regulation, except as otherwise specifically provided, applies to persons who use, manufacture, produce, transport, transfer, receive, acquire, possess, own or dispose of a radiation source.

1.2.2 A person, when required, shall register or obtain a license for radiation sources in the possession or control of the person, and shall comply with the statute and this regulation.

1.2.3 As established in 18 V.S.A. § 1653 (c) this rule does not regulate materials or activities reserved to the Nuclear Regulatory Commission (NRC) under 42 U.S.C. § 2021 (c) and 10 C.F.R. Part 150. Similarly, this rule only regulates nonionizing radiation under state authority.

1.2.4 Notwithstanding the requirements incorporated by reference, nothing in this rule relieves or limits a person from complying with the laws of the State of Vermont, including Vermont Statutes Title 18: Chapter 32, Title 10: Chapter 161, Title 10: Chapter 162 and Title 18: Chapter 31.

1.2.5 Title 10 Chapter I (Nuclear Regulatory Commission) Parts 19, 20, 30, 31, 32, 33, 34, 35, 36, 37, 39, 40, 70, 71, 150.1, 150.2, 150.3, 150.11, 150.20, 170, and 171 of the C.F.R. are incorporated by reference with the exceptions set forth in the relevant subsections, which either do not apply or are under the authority of the NRC. The unofficial version of these parts
may be accessed at: [http://www.nrc.gov/](http://www.nrc.gov/). An official version is also available by hard copy.

1.2.6 To reconcile differences between this regulation and the incorporated sections of Federal regulations and to effectuate their joint enforcement, the following words and phrases shall be substituted for the language of the Federal regulations:

1.2.6.1 With the exception of 10 C.F.R. 30.4 and in the definition of Special Nuclear Material in 10 C.F.R. 20.1003 which are incorporated by reference, a reference to “NRC” or “Commission” means the Vermont Department of Health.

1.2.6.2 A reference to “NRC or agreement state” means the Vermont Department of Health, NRC, or agreement state.

1.2.6.3 A reference to “the Act” means a reference to Vermont statute 18 V.S.A. § 1651-1658.

1.2.6.4 The definition of “sealed source” means radioactive material that is permanently bonded or fixed in a capsule or matrix designed to prevent release and dispersal of the radioactive material under the most severe conditions which are likely to be encountered in normal use and handling.

1.2.6.5 A reference to “byproduct material” includes NARM. In 10 C.F.R. 40.4, the definition of “Byproduct Material” includes naturally occurring or accelerator-produced material (NARM).

1.2.6.6 In 10 C.F.R. 40.4 the terms “Foreign Obligations” and Reconciliation” are not incorporated. In 10 C.F.R. 40.4, in the definition of “Special Nuclear Material”, the sentence “and any other material which the Commission, pursuant to the provisions of section 51 of the Act, determines to be special nuclear material”, remains preserved.

1.2.6.7 With the exception of criminal history records required by 10 C.F.R. 37.27 (relating to requirements for criminal history checks of individuals granted unescorted access to category 1 or category 2 quantities of radioactive material), notifications, reports and correspondence referenced in the incorporated parts of 10 C.F.R. shall be directed to the Vermont Department of
Health after agreement state status is in effect, and, for NRC licenses, to the NRC until agreement state status is in effect. Criminal history records required by 10 C.F.R. 37.27 are to be sent to the NRC. Communications and reports concerning these regulations and applications filed under it shall be addressed to the Radiological & Toxicological Sciences Program, Vermont Department of Health, 108 Cherry Street, Suite 201, Burlington, Vermont, 05401.

1.2.6.8 Instructions in 10 C.F.R. to use forms of the NRC means to use forms of the Department, which will be available on the Department website at [http://healthvermont.gov](http://healthvermont.gov)

1.2.6.9 In 10 C.F.R. 30.18(d), 30.32(g), 31.5(b)(1)(ii), 31.5(c)(3)(ii), 31.5(c)(8)(i), 31.6, 31.7(a), 31.10(a), 31.10(b)(1), 31.12(c)(4), 32.13, 32.51(a), 32.51(c), 32.56, 32.59, 32.72(b)(5)(ii), 40.13(c)(10), 40.22(e), 40.25(b), 40.25(d)(3), 40.54, 40.55(c), (c)(1), (d)(1)(ii), (d)(2) and (d)(3), where a reference is made to “an Agreement State”, it means “an Agreement State or the NRC”.

1.2.6.10 In 10 C.F.R. 70.19(a) and 70.19(c)(3), the terms “Commission or the Atomic Energy Commission” remains and does not mean the “Department”. In 10 C.F.R. 70.42(b)(1) the word “Department” means the “US Department of Energy”.

1.2.6.11 In 10 C.F.R. 150.20, where the words “non-agreement states”, “areas of exclusive federal jurisdiction within agreement states”, or “offshore waters” are used in 150.20(a)(1)(i), (ii), (iii), (b), (b)(3), and (b)(4) substitute the words “the State of Vermont”. Where the words “agreement state license” are used in 10 C.F.R. 150.20, also add the words “Nuclear Regulatory Commission license”. Where the words “license issued by an agreement state” are used in 10 C.F.R. 150.20 also add the words “license issued by the Nuclear Regulatory Commission”. Where the words “license from an agreement state” are used in 10 C.F.R. 150.20 also add the words “license from the Nuclear Regulatory Commission”.
1.2.6.12 In 10 C.F.R. 31, where the words “any non-agreement state” or “offshore waters” are used in 31.6 substitute the words “State of Vermont”.

1.2.7 The following Conference of Radiation Control Program Directors (CRCPD) Suggested State Regulations (SSRs) are incorporated by reference:

1.2.7.1 Part B, Registration of Radiation Machine Facilities, Services and Associated Healthcare Professionals.

1.2.7.2 Part F, Medical Diagnostic and Interventional X-Ray Systems.

1.2.7.3 Part H, Radiation Safety Requirements for Non-Healing Arts Radiation Generating Devices.

1.2.7.4 Part I, Radiation Safety Requirements for Particle Accelerators.

1.2.7.5 Part X, Therapeutic Radiation Machines.

1.2.8 The above CRCPD SSRs do not pertain to the use of radioactive materials. Notwithstanding the SSRs incorporated by reference in section 1.2.7 the following are not incorporated by reference:

1.2.8.1 Section B.1.b and c; Section B.17.e; Appendix B, paragraph 2(e); Appendix C, paragraph 2(a)(2)(g); and Appendix D, paragraph 2.

1.2.8.2 Sections F.1.; F.3.a.i(2); F.3.a.xxi; F.3.a; and F.15.b.

1.2.8.3 Sections H.2.a and e; H.3; H.5.c.iv; H.6.b.i; H.6.c.i; H.6.e.i.7; H.6.e.iii; H.6.f; H.8.i; H.8.k; H.9.a.i; and H.10.f.

1.2.8.4 Sections I.1.b; I.3.a; I.6.a.ii; I.7.b; and I.12.a and b.

1.2.8.5 Sections X.3.i; X.4.a.i; X.4.b; X.6.r.vi; X.7; X.7.q.vii; X.9.a; and Appendix A, paragraph II.c.

1.2.9 To reconcile differences between this regulation and the incorporated sections of the Conference of Radiation Control Program Directors (CRCPD) Suggested State Regulations, the following words and phrases shall be substituted for the language of:

1.2.9.1 Title and name changes. To reconcile differences between this chapter and the incorporated sections of the CRCPD Suggested State Regulations (SSRs) and to effectuate their joint
enforcement, the following words and phrases shall be substituted for the language of the SSRs as follows:

1.2.9.1.1 A reference to “NRC” or “Commission” or “Agency” means Department.

1.2.9.1.2 A reference to “NRC or agreement state” means “Department, NRC or agreement state.”

1.2.9.2 **Forms and documents.** References to forms in the SSR incorporated by reference will be replaced by the appropriate forms prescribed by the Department.

1.2.9.3 **Notifications, reports and correspondence.** Notifications, reports and correspondence referenced in the incorporated parts of the SSR shall be directed to the Department and, for NRC licenses, to the NRC until agreement state status is in effect. Communications and reports concerning these regulations and applications filed under it shall be addressed to the Radiological & Toxicological Sciences Program, Vermont Department of Health, 108 Cherry Street, Suite 201, Burlington, Vermont, 05401.

1.2.9.4 A reference to “license,” “licenses,” “licensed” and “licensed radioactive material” also include “registration,” “registrant” “registered,” and “registered source of radiation,” respectively.

### 1.3 Definitions.

The definitions in 10 C.F.R. Chapter 1, Parts 19, 20, 30, 31, 32, 33, 34, 35, 36, 37, 39, 40, 70, 71, 150, 170 and 171 and in CRCPD SSR B, F, H, I, S and X are incorporated by reference in this rule unless indicated otherwise. In addition, the following words and terms, when used in this rule, have the following meanings, unless the context clearly indicates otherwise:

1.3.1 “Agreement State” means any State with which the Atomic Energy Commission or the Nuclear Regulatory Commission has entered into an effective agreement under subsection 274b. of the Atomic Energy Act of 1954, as amended.

1.3.2 “Alert” means events may occur, are in progress, or have occurred that could lead to a release of radioactive material but that the release is not
expected to require a response by offsite response organizations to protect persons offsite.

1.3.3 “Byproduct material” means the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by such solution extraction operations do not constitute “byproduct material” within this definition.

1.3.4 “Department” means the Department of Health.

1.3.5 “Licensed practitioner of the healing arts” means an individual licensed by the State of Vermont pursuant to Title 26 to practice the healing arts, which for the purposes of this rule shall be limited to medicine, surgery, dentistry, osteopathy, podiatry and chiropractic.

1.3.6 “NARM” means a naturally occurring or accelerator-produced radioactive material. The term does not include by-product, source or special nuclear material. In 10 C.F.R. 40.4, the definition of “Byproduct Material” includes NARM.

1.3.7 “Registrant” means a person who is legally obligated to register radiation machines with the Department under these regulations and the statute.

1.3.8 “Registration” means the act of registering radiation machines with the Department under these regulations.

1.3.9 “Regulated entity” means any individual, person, organization or corporation that is subject to the regulatory jurisdiction of the Department within the scope of this rule.

1.3.10 “Site Area Emergency” means events may occur, are in progress, or have occurred that could lead to a significant release of radioactive material and that could require a response by offsite response organizations to protect persons offsite.

1.3.11 “Source material” means: (1) uranium or thorium, or any combination thereof, in any physical or chemical form or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of: (1) uranium, (i2) thorium or (3) any combination thereof. Source materials does not include special nuclear material.
1.3.12 “Special nuclear material” means: (1) plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 51 of the Act, determines to be special nuclear material; or (2) any material artificially enriched by any of the foregoing.

1.3.13 “Traceable to a National Standard” means a system which has been calibrated by the National Institute of Science and Technology or by a Regional Calibration Laboratory accredited by the American Association of Physicists in Medicine.

1.3.14 “Unrefined and unprocessed ore” means ore in its natural form prior to any processing, such as grinding, roasting or beneficiating, or refining. Processing does not include sieving or encapsulation of ore or preparation of samples for laboratory analysis.

1.3.15 The definition of regulated entities in 10 C.F.R. 19.3 is not incorporated by reference.

2.0 Compliance Monitoring

2.1 Records.

2.1.1 Registrants shall maintain records showing the receipt, transfer and disposal of radiation producing machines. Additional record requirements are specified elsewhere in these regulations including but not limited to Section III. Radiation-Producing Machines.

2.1.2 Licensees shall maintain records showing the receipt, transfer and disposal of radioactive material as described in 10 C.F.R. 30.51, relating to records.

2.2 Inspections and investigations.

2.2.1 The Department may conduct inspections and investigations of the facilities and regulated activities of registrants of radiation-producing machines and licensees of radioactive material necessary to demonstrate compliance with these regulations.

2.2.2 Maintenance of records. Licensees and registrants shall maintain records under this rule and have these records available for inspection by the Department at permanent sites or facilities of use identified in a license or registration issued under this regulation.
2.2.3 Licensees and registrants will permit the Department to:

2.2.3.1 Have access to, and require the production of, books, papers, documents and other records and physical evidence pertinent to a matter under inspection or investigation.

2.2.3.2 Require a registrant or licensee to make reports and furnish information to the Department.

2.2.3.3 Enter the premises of a licensee or registrant for the purpose of investigation or inspection of radiation sources and the premises and facilities where radiation sources are used or stored, necessary to ascertain the compliance or noncompliance with these regulations and this subsection and to protect health, safety and the environment.

2.2.4 The Department may conduct additional follow-up inspections and investigations if violations of the regulations promulgated thereunder were noted at the time of the original inspection, or if a person presents information, or circumstances arise, which give the Department reason to believe that the health and safety of a person is threatened or that these regulations are being violated.

2.3 Tests.

Licensees and registrants, upon instruction from the Department, shall perform, or permit the Department to perform reasonable tests as the Department deems appropriate or necessary including, but not limited to, tests of:

2.3.1 Radiation sources.

2.3.2 Facilities in which radiation sources are used or stored.

2.3.3 Radiation detection and monitoring instruments.

2.3.4 Other equipment and devices in connection with utilization or storage of licensed or registered radiation sources.

2.4 Additional requirements.

The Department may impose upon a person, requirements additional to those established in these regulations which it may deem reasonable and necessary to protect the public health and safety. As an example, when necessary or desirable to determine the extent of an individual’s exposure to concentrations of
radioactive material, the Department may require a licensee to provide to the individual appropriate bioassay services, medical services and the services of a qualified expert and to furnish a copy of the reports of these services to the Department.

3.0 Prohibitions, Restrictions and Additional Requirements

3.1 Sale or installation of radiation sources.

No person may sell or install within the state of Vermont a radiation source which does not meet the requirements of these regulations.

3.2 Human use.

3.2.1 No use of radiation sources on humans may be permitted except under this regulation, and limited to the following license or certificate holders under Vermont Statutes Annotated, Title 26 Professions and Occupations:

Podiatry (Chapter 7); Chiropractic (Chapter 10); Dentists, Dental Hygienists, and Dental Assistants (Chapter 12); Medicine (Chapter 23); Physician Assistants (Chapter 31); Osteopathy (Chapter 33); Radiology (Chapter 51); Radiologist Assistants (Chapter 52).

3.2.2 Auxiliary personnel employed by a licensed practitioner of the healing arts at the location at which the licensed practitioner practices may use radiation sources in the healing arts provided those individuals comply with the applicable requirements in 3.2.1.

3.2.3 Auxiliary personnel employed by a health care facility regulated by the Department of Health may only use radiation sources in the healing arts in accordance with written job descriptions and employee qualifications.

3.2.4 Paragraphs 3.2.2 and 3.2.3 notwithstanding, human use of radiation sources is permitted by individuals enrolled in clinical training programs that satisfy the related accreditation requirements of the boards in paragraph 3.2.1 and who are under the supervision of a licensed practitioner of the healing arts or of auxiliary personnel authorized under paragraphs 3.2.2 and 3.2.3 to use radiation sources in the healing arts.

3.3 Deliberate misconduct.

The requirements under 10 C.F.R. 30.10 (relating to deliberate misconduct) are incorporated by reference. In 10 C.F.R. 30.10(b), the reference to 10 C.F.R. 2,
relating to deliberate misconduct, is replaced with 18 VSA § 1651 – 1657 and Radioactive Material Program Procedure Section 2.5, Enforcement, Escalated Enforcement and Administrative Actions. This requirement also applies to radiation machine registrants.

3.4 Employee protections.
The requirements under 10 C.F.R. 30.7 (relating to employee protection) are incorporated by reference. This requirement also applies to radiation machine registrants.

3.5 Vacating premises.
In addition to the decommissioning requirements of 10 C.F.R. 30.36 (relating to expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas) that are incorporated by reference under Subsection 11.0 (relating to licensing of radioactive material), a licensee shall notify the Department in writing of intent to vacate at least 30 days before vacating or relinquishing possession or control of premises which may have been contaminated with radioactive material as a result of the licensee’s activities. When deemed necessary by the Department, the licensee shall decontaminate the premises as the Department may specify.

3.6 Improper use of a monitoring device.
The deliberate exposure of, failure to use, or improper use of, an individual monitoring device or area monitoring device by an individual is prohibited.

3.7 Penalties.
A person who violates this rule is subject to the civil and criminal penalties in the Atomic Energy Act (AEA) of 1954, as amended, and the Energy Reauthorization Act (ERA) of 1974, as amended. At a minimum, civil penalties may be assessed in an amount sufficient to recover the costs expended by the Department in the correction of the violation or abatement of the resulting radiological nuisance.

4.0 Exemptions

4.1 Granting exemptions.
The Department may, upon application therefore or upon its own initiative, grant exemptions from this regulation when the Department makes a finding that the exemption(s) do not result in significant risk to the health and safety of the public.
and safeguards that provide equivalent levels of protection in this rule are implemented.

### 4.2 Exemption qualifications.

The following sources, uses and types of users are exempt from this subchapter: Federal government agencies.

#### 4.2.1 Electrical equipment

- **4.2.1.1** Equipment that produces radiation incidental to its operation for other purposes, if the dose equivalent rate averaged over an area of 10 square centimeters does not exceed 0.005 mSv (0.5 mrem) per hour at 5 centimeters from an accessible surface.

- **4.2.1.2** The equipment is not exempt when operated without adequate shielding during testing and servicing if radiation levels exceed those specified. Electron beam welders and electron microscopes are not exempt.

#### 4.2.2 Radiation-producing machines in transit or in storage incident thereto.

#### 4.2.3 A material, product or use specifically exempted from licensing requirements by the NRC, the Department or an agreement state or authorized for distribution to persons exempt from license requirements.

### 5.0 Fees

#### 5.1 Scope.

- **5.1.1** This subsection establishes fees for registrations of radiation-producing machines and licensing of radioactive materials and provides for their payment. The fee for registering machines is found at 18 V.S.A. § 1652 (e) and the fee schedule for licensing materials is found at 18 V.S.A. § 1653 (b)(3).

- **5.1.2** For the purpose of this subsection, radiation-producing machines and/or radioactive materials under the same administrative control in a single building are registered or licensed as a single facility. Radiation-producing machines and/or radioactive materials under the same administrative control at the same address or in a contiguous group of buildings may be registered or licensed as a single facility if the Department determines that it is appropriate.
5.1.3 Except as otherwise specifically provided, this subsection applies to a person who:

5.1.3.1 Is required to register or renew registration for radiation-producing machines or radiation-producing machine service providers under Subsection 19.0 (relating to registration of radiation machine facilities, services and associated healthcare professionals).

5.1.3.2 Is an applicant for or holder of a radioactive material license issued under Subsection 11.0 (relating to licensing of radioactive materials).

5.1.3.3 Is an applicant for or holder of an accelerator license issued under Subsection 22.0 (relating to radiation safety requirements for particle accelerators).

5.2 Incorporation by reference.

5.2.1 Notwithstanding the requirements incorporated by reference, Sections 170.2(d), 170.2(e), 170.2(g) through 170.2(p), 170.2(t), 170.4, 170.5, 170.8, 170.11, 170.12(c)(1), 170.12(c)(3), 170.12(d) through 170.12(f), 170.21, 170.51, 171.8, 171.9, 171.11, 171.13, 171.15, 171.16(a)(1)(v), 171.17(a), 171.19, 171.23 and 171.25 are not incorporated by reference.


5.3 Radioactive materials and x-ray fees.

5.3.1 The annual registration fees for radiation-producing machines are found at 18 V.S.A. § 1652 (e).

5.3.2 A registrant filing an initial registration or an application for renewal of a certificate of registration in accordance with Subsection 19.0 (relating to registration of radiation producing machines) shall remit the appropriate fee calculated by using the information on the registration or application form and the fee schedule in effect at the time of registration. Fees for any initial registration are payable upon the filing of the registration. Fees for the renewal of a certificate of registration are payable upon the submission
of an application for a renewal of a certificate of registration. If the number of tubes increases after an initial registration or after an application for renewal has been filed with the Department, no additional fee is required until the time of the next registration. Likewise, if the number of tubes decreases during the year, no refund will be made for that year.

5.3.3 Annual license fees for radioactive material are set forth in 10 C.F.R. 171. Other radioactive materials fees are described in 10 C.F.R. 170.

5.3.3.1 No refund will be made for termination of a license.

5.3.3.2 If, by amendment or otherwise, a license changes to another fee category, the fee for the new category will take effect on the anniversary date of the license.

5.3.4 An initial application for a license or reciprocity shall be accompanied by a check payable to the Department in accordance with the fee schedules in 10 C.F.R. 170 and 171. Thereafter, the Department will issue an annual fee invoice in accordance with the appropriate fee schedule at least 2 months prior to the license expiration. Fees are payable by the last day of the license expiration month as shown on the license fee invoice. This provision is not applicable to full cost recovery licenses.

5.3.5 The Department will not accept an initial application for a license or registration prior to payment of the fees required by paragraphs 5.3.2 and 5.3.3.

5.3.6 If the registration involves more than one facility in paragraph 5.3.2, or if a license involves more than one of the categories in paragraph 5.3.3, the highest applicable fee applies.

5.3.7 Special provisions for calculating annual fees during agreement state transition period.

5.3.7.1 The annual fees for the NRC licenses that are transferred to the State of Vermont on the date the State of Vermont becomes an agreement state will be invoiced on the license’s next anniversary date.

5.3.7.2 During the first year after the date the Department attains agreement state status, the annual fee for each NRC license transferred to the State of Vermont will include a proportional
amount, based on the schedule of fees in 10 C.F.R. 171, for the period from the date agreement state status is attained until the license’s next anniversary date, in addition to the amount assessed for the year following the license’s anniversary date.

6.0 Standards for Protection Against Radiation

6.1 Purpose and scope.

6.1.1 This subsection establishes standards for protection against ionizing radiation resulting from activities conducted under licenses or registrations issued by the Department. Licensees and registrants shall comply with this subsection.

6.1.2 The requirements of this subsection are designed to control the receipt, possession, use, transfer and disposal of sources of radiation by a licensee or registrant so the total dose to an individual, including doses resulting from all sources of radiation other than background radiation, does not exceed the standards for protection against radiation prescribed in this subsection. This subsection does not limit actions that may be necessary to protect health and safety in an emergency. In the event of an emergency, the Department will provide temporary guidance for dose management and other health protections.

6.1.3 Except as specifically provided in other subsections of this rule, this subsection applies to persons licensed or registered by the Department to receive, possess, use, transfer or dispose of sources of radiation including radiation-producing machines.

6.1.4 The limits in this subsection do not apply to doses due to background radiation, to exposure of patients to radiation for the purpose of medical diagnosis or therapy, to exposure from individuals administered radioactive material in accordance with Subsection 14.0 (related to medical use of byproduct material) or to voluntary participation in medical research programs.

6.2 Incorporation by reference.

6.2.1 Except as provided in this subsection, the requirements of 10 C.F.R. Part 20 (relating to standards for protection against radiation) are incorporated by reference. An unofficial version can be accessed at
http://www.nrc.gov. The official version is also available in hard copy.

6.2.2 Notwithstanding the requirements incorporated by reference, Sections 20.1006; 20.1009; 20.1405(b); 20.1406(b); 20.1905(g); 20.2203(c); 20.2206(a)(1), (3), (4) and (5); 20.2401 and 20.2402 are not incorporated.

6.2.3 Effect of incorporation of 10 C.F.R. 20.1403 “Criteria for license termination under restricted conditions.”

The Department will not terminate a license under the conditions of restricted release as provided for in 10 C.F.R. 20.1403 (relating to criteria for license termination under restricted conditions) until a license termination plan (LTP), approved by the Department, has been in effect for a period of time demonstrating to the Department that continued implementation of the plan will be effective in maintaining compliance with the required conditions of the plan. The Department may choose to implement the license termination process in one or more of the following steps:

6.2.3.1 The license is amended to authorize activities necessary to begin decommissioning under the LTP.

6.2.3.2 After decommissioning activities are complete and the provisions of 10 C.F.R. 20.1403 are in effect under the LTP, the license may be amended to end authorization of licensed activities. The license shall remain in effect for up to 5 years being limited to ownership/possession of the decommissioned material.

6.2.3.3 At the end of the period prescribed in paragraph 6.2.3.2, the Department will make a determination of the effectiveness of the established LTP. If the LTP has demonstrated the ability to maintain compliance with 10 C.F.R. 20.1403, the license will be terminated subject to the revisitation provision of 10 C.F.R. 20.1401(c) (relating to general provision and scope) regarding new evidence of a significant threat to health and safety. Otherwise, the licensee will be directed by the Department to take corrective actions as necessary to conform to 10 C.F.R.
20.1403 and the process shall revert back to paragraph 6.2.3.2.

6.3 Requirements for a Radiation Safety Committee.

The requirements of 10 C.F.R. 35.24 (relating to authority and responsibilities for the radiation protection program) apply to registrants as well as licensees. For the purpose of this requirement, facilities that utilize two or more modalities in which patients are likely to receive or will receive a dose to an organ in excess of 2.0 gray (200 rads), shall have a radiation safety committee.

6.4 Storage and control of licensed or registered sources of radiation.

6.4.1 Security of stored radiation machines. In addition to incorporation by reference of 10 C.F.R. Part 20 (relating to standards for protection against radiation), the licensee or registrant shall secure from unauthorized removal or access radiation sources including radiation machines that are in storage.

6.4.2 Control of radiation machines not in storage. In addition to incorporation by reference of 10 C.F.R. Part 20 (relating to standards for protection against radiation), the licensee or registrant shall maintain control of radiation producing machines that are not in storage.

6.5 Precautionary procedures. Posting of radiation-producing machines.

6.5.1 The registrant or licensee shall ensure that each radiation producing machine is labeled in a conspicuous manner which cautions individuals that radiation is produced when it is energized. For example:

Caution—Radiation

This Equipment Produces Radiation
When Energized.

6.5.2 In addition to incorporation by reference of 10 C.F.R. Part 20 (relating to standards for protection against radiation), a room or area is not required to be posted with a caution sign because of the presence of radiation machines used solely for diagnosis in the healing arts.

6.6 Reports of stolen, lost or missing licenses, or registered sources of radiation.
6.6.1 **Reports.** In addition to incorporation by reference of the requirements in 10 C.F.R. Part 20 (relating to standards for protection against radiation) covering the reporting requirements associated with reports of theft or loss of licensed material, the following reporting requirements apply to radiation-producing machines:

6.6.1.1 **Telephone reports.** Each licensee or registrant shall report to the Department by telephone within 24 hours, after its occurrence becomes known, a stolen, lost or missing radiation producing machine.

6.6.1.2 **Written reports.** Each licensee or registrant required to make a report under 6.7.1 shall, within 30 days after making the telephone report, make a written report to the Department setting forth the following information:

6.6.1.2.1 A description of the licensed or registered source of radiation involved, including, for radiation producing machines, the manufacturer, model and serial number, type and maximum energy of radiation emitted.

6.6.1.2.2 A description of the circumstances under which the loss or theft occurred.

6.6.1.2.3 A statement of disposition, or probable disposition, of the licensed or registered source of radiation involved.

6.6.1.2.4 Exposures of individuals to radiation, circumstances under which the exposures occurred and the possible total effective dose equivalent to persons in unrestricted areas.

6.6.1.2.5 Actions that have been taken, or will be taken, to recover the source of radiation.

6.6.1.2.6 Procedures or measures that have been, or will be, adopted to ensure against a recurrence of the loss or theft of licensed or registered sources of radiation.

6.6.1.3 **Additional information.** Subsequent to filing the written report, the licensee or registrant shall also report any additional substantive information on the loss or theft within 30 days after the licensee or registrant learns of the information.
6.6.1.4 *Detachable reports.* The licensee or registrant shall prepare a report filed with the Department under this subsection so that the names of individuals who may have received exposure to radiation are stated in a separate and detachable portion of the report.

6.6.2 *Notification of incidents and reportable events.* In addition to incorporation by reference of the requirements in 10 C.F.R. 20.2202 and 20.2203 (relating to notification of incidents; and reports of exposures, radiation levels and concentrations of radioactive material exceeding the constraints or limits), those notification requirements, as well as written 30-day reports under 10 C.F.R. 20.2203(a), also apply to radiation-producing machines and NARM.

6.6.3 *Reports of leaking or contaminated sealed sources.* If the test for leakage or contamination, required under Subsection 6.5 (relating to testing for leakage or contamination of sealed sources), indicates a sealed source is leaking or contaminated, a report of the test shall be filed within 5 days with the Department describing the equipment involved, the test results and the corrective action taken.

6.6.4 *Reports of medical reportable events for radiation-producing machine therapy.* For a medical reportable event for radiation-producing machine therapy, the licensee or registrant shall do the following:

6.6.4.1 Notify the Department by telephone within 24 hours after discovery of the event.

6.6.4.2 Submit a written report to the Department within 15 days after discovery of the event. The written report shall include:

6.6.4.2.1 the licensee’s or registrant’s name;
6.6.4.2.2 the prescribing physician’s name;
6.6.4.2.3 a brief description of the event;
6.6.4.2.4 why the event occurred;
6.6.4.2.5 the effect on the patient;
6.6.4.2.6 what improvements are needed to prevent recurrence;
6.6.4.2.7 actions taken to prevent recurrence;
6.6.4.2.8 whether the licensee or registrant notified the patient, or the patient’s responsible relative or guardian (for notification purposes under this subsection, this person will be included in subsequent references to “the patient”), and if not, why not; and if the patient was notified, what information was provided to the patient. (The report may not include the patient’s name or other information that could lead to identification of the patient.)

6.6.4.3 Notify the referring physician, if applicable, and also notify the patient of the event within 24 hours after its discovery, unless the referring physician personally informs the licensee either that he will inform the patient or that, based on medical judgment, telling the patient would be harmful. The licensee or registrant is not required to notify the patient without first consulting the referring physician. If the referring physician or patient cannot be reached within 24 hours, the licensee or registrant shall notify the patient as soon as possible thereafter. The licensee or registrant may not delay appropriate medical care for the patient, including necessary remedial care, because of delay in notification.

6.6.4.4 If the patient was notified, the licensee or registrant shall also furnish, within 15 days after discovery of the event, a written report to the patient by sending either a copy of the report that was submitted to the Department OR a brief description of both the event and the consequences, as they may affect the patient, if a statement is included that the report submitted to the Department can be obtained from the licensee or registrant.

6.6.5 The licensee or registrant shall retain a record of each medical reportable event for radiation-producing machine therapy for ten years. The record shall contain the names of the individuals involved (including the prescribing physician, allied health personnel, the patient and the patient’s referring physician), the patient’s Social Security number or identification number if one has been assigned, a
brief description of the event, why it occurred, the effect on the patient, what improvements are needed to prevent recurrence and the actions taken to prevent recurrence.

6.6.6 *Other medical reports.* Within 30 days of the determination by a physician of either actual or suspected acute or long-term functional damage to an organ or a physiological system of a patient exposed to therapeutic or diagnostic radiation from a radiation-producing machine, the registrant or licensee shall document the finding and provide a report to the Department and provide a clinical summary to the prescribing physician and the patient.

6.6.6.1 The report shall be retained for at least ten years.

6.6.6.2 Exempt from this reporting requirement are any events already reported under Subsection 23.0 (relating to reports for therapeutic radiation machines and notifications of misadministrations) and any functional damage to a patient organ or a physiological system that was an expected outcome when the causative procedures were prescribed.

6.6.7 In addition to incorporation by reference of 10 C.F.R. Part 20, the registrant of radiation producing machines shall prepare each report filed with the Department pursuant to 10 C.F.R. 20.2202 (relating to notification of incidents) so that names of individuals who have received exposure to radiation from radiation producing machines are stated in a separate and detachable portion of the report.

### 7.0 Notices, Instructions and Reports to Workers; Inspections and Investigations

#### 7.1 Purpose and scope.

7.1.1 This subsection establishes requirements for notices, instructions and reports by licensees or registrants to individuals engaged in activities under a license or registration. This subsection also establishes options available to the individuals in connection with Department inspections of licensees or registrants to ascertain compliance with the provisions of the Vermont State Statutes and regulations, orders and licenses issued thereunder regarding radiological working conditions.

7.1.2 This subsection applies to persons who receive, possess, use, own or transfer radiation sources licensed by or registered with the Department under Subsections 11.0 and 19.0 (relating to licensing of
radioactive material; and registration of radiation machine facilities, services and associated healthcare professionals).

7.2 Incorporation by reference.

7.2.1 Except as provided in this subsection, the requirements of 10 C.F.R. Part 19 (relating to notices, instructions and reports to workers; inspections and investigations) are incorporated by reference. The unofficial version can be accessed at http://www.nrc.gov. The official version is also available in hard copy.

7.2.2 Notwithstanding the requirements incorporated by reference, Sections 19.4; 19.5; 19.8; 19.11(a)(4), (b) and (e); 19.14(a); 19.30 and 19.40 are not incorporated. In 10 C.F.R. 19.13(a), where it says “Commission” and “Nuclear Regulatory Commission” this means the Department.

8.0 Reserved

9.0 Reserved

10.0 Enforcement

10.1 Purpose and scope.

10.1.1 Whenever the Department has reasonable grounds to believe that there has been a violation of any of the provisions of this rule, the Department may take appropriate action as provided in this subsection or otherwise provided in law at 18 V.S.A. Ch. 32, to protect the public health and safety.

10.1.2 If an inspection indicates that the regulated entity is not in compliance with the requirements of this rule, the Department shall notify the regulated entity in writing regarding any deficiencies.

10.1.3 The notice shall include specific required corrective actions necessary for the regulated entity to take to regain compliance with this rule and may include interim corrective actions, such as requiring further investigation of the circumstances giving rise to the notice, or ceasing use of the sources of radiation until full compliance is restored, or such other action deemed necessary by the Department to protect the public health and safety is completed.

10.1.4 If the Department determines that an enforcement action is appropriate, or if timely and satisfactory compliance with a notice
issued pursuant to paragraph 10.1.2 has not been achieved, the Department shall issue a notice of violation in writing.

10.2 **Denial, amendment, suspension, revocation or waiver.**

10.2.1 In any proceeding for granting, denying, amending, suspending or revoking a license or registration, determining compliance with, or granting exemptions from, rules or regulations of the Department, the Department shall hold a public hearing upon the request of any person whose interest may be affected. Any such person shall become a party to the proceeding. Proceedings shall be conducted in accordance with 18 V.S.A. § 1655 and 3 V.S.A. § 814 (the Administrative Procedures Act).

10.2.2 Any final order entered in any proceeding under 10.2.1 may be appealed to the Civil Division of the Superior Court.

10.3 **Emergency orders.**

If the Department finds that an emergency exists that requires immediate action to protect the public health and safety the Department may, without notice or hearing, issue an order requiring such action as is necessary to address the emergency in accordance with 18 V.S.A. § 1655 (b). Such orders must include a description of the nature of the emergency. Emergency orders take immediate effect and any person to whom the order is directed shall immediately comply. Any person(s) subject to such an order may make application to the Department for a hearing which shall be held within ten days. A decision shall be issued within ten days of the hearing that will continue, modify, or revoke the emergency order.

10.4 Whenever, in the judgment of the Department, any person has engaged in or is about to engage in any acts or practices which constitute or will constitute a violation of this rule, or its authorizing statute, the Department will refer the matter to the Attorney General who can seek relief in accordance with 18 V.S.A. § 1656.
Section II. Radioactive Material

11.0 Licensing of Radioactive Materials

11.1 Purpose and scope.

11.1.1 This subsection establishes requirements for the licensing of radioactive material. A person may not manufacture, produce, receive, possess, use, transfer, own, dispose or acquire radioactive material except as authorized in a specific or general license issued under this subsection or otherwise provided in this subsection.

11.1.2 A licensee is also subject to Section I Overview and other relevant subsections of Section II Radioactive Material.

11.2 The use of radioactive material in the State of Vermont under a license issued by the NRC is exempt from the licensing requirements of this subsection.

12.0 Rules of General Applicability to Licensing of Radioactive Materials

12.1 Persons possessing a license for source, byproduct or special nuclear material in quantities not sufficient to form a critical mass on the date Vermont becomes an Agreement State as published in the Federal Register:

On the date the State of Vermont becomes an agreement state as published in the Federal Register, a person who possesses a general or specific license issued by the NRC for source, byproduct or special nuclear material in quantities not sufficient to form a critical mass, is deemed to possess a like license issued under this subsection and the statutes. The license shall expire either 90 days after receipt from the Department of a notice of expiration of the license, or on the date of expiration specified in the NRC license, whichever is earlier.

12.2 Incorporation by reference.

12.2.1 Except as provided in this subsection, the requirements of 10 C.F.R. Part 30 (relating to rules of general applicability to domestic licensing of byproduct material) are incorporated by reference. The unofficial version can be accessed at http://www.nrc.gov/. The official version is also available in hard copy. In 10 C.F.R. 30.10(b), the reference to 10 C.F.R. 2 relating to deliberate misconduct is replaced with 18 VSA § 1651 – 1657 and Radioactive Material Program Procedure Section
2.5. Enforcement, Escalated Enforcement and Administrative Actions. In 10 C.F.R. 30.50(c)(1), a reference to “NRC Operations Center” means “Department”. In 10 C.F.R. 30.50(c)(2), reference to written reports means “Written reports must be sent to: Vermont Department of Health, 108 Cherry Street, Suite 201, Burlington Vermont 05401, Attn: Radioactive Materials Program.”

12.2.2 Notwithstanding the requirements incorporated by reference, Sections 30.5; 30.6; 30.8; 30.21(c); 30.34(d) and (e)(1) and (3); 30.41(b)(6); 30.55; 30.63; 30.64 and the words “common defense and security” in the definitions for “Commencement of Construction” and “Construction” in 10 C.F.R. 30.4 are not incorporated. In 10 C.F.R. 30.10(b), the reference to 10 C.F.R. 2, relating to deliberate misconduct, is replaced with 18 V.S.A. § 1651 – 1657 and Radioactive Material Program Procedure Section 2.5, Enforcement, Escalated Enforcement and Administrative Actions. In 10 C.F.R. 30.50(c)(1), a reference to “NRC Operations Center” means “Department.” In 10 C.F.R. 30.50(c)(2), reference to written reports means written reports must be sent to: Vermont Department of Health, 108 Cherry Street, Suite 201, Burlington, Vermont 05401, Attn: Radioactive Materials Program.

12.2.3 Only the NRC can issue a license under 10 C.F.R. 32.11, 32.22, 32.26 and 32.30.

12.3 Filing applications for specific license.
In addition to incorporation by reference, an application for a specific license shall be accompanied by the fee required under Subsection 5.0 (relating to fees).

12.4 Renewal of licenses.
An application for renewal of a specific license shall be filed under Subsection 11.0 (relating to licensing of radioactive material).

12.4.1 If a renewal application is filed prior to 30 days before the expiration of a license, the existing license does not expire until definitive notice has been given by the Department of its action on the renewal application.
12.4.2 This paragraph also applies to new license applications incorporating other licenses.

12.5 General licenses for radioactive material.

12.5.1 Incorporation by reference.

12.5.1.1 Except as provided in this subsection, the requirements of 10 C.F.R. Part 31 (relating to general domestic licenses for byproduct material) are incorporated by reference. The unofficial version can be accessed at http://www.nrc.gov/. The official version is also available in hard copy.

12.5.1.2 Notwithstanding the requirements incorporated by reference, Sections 31.4, 31.22 and 31.23 are not incorporated. In 10 C.F.R. 31.5(c)(7), the phrase “part 110” is replaced by “10 C.F.R. part 110.” In 10 C.F.R. 31, the term “any non-agreement state” means “Vermont.”

12.5.2 Certain measuring, gauging or controlling devices.

12.5.2.1 In addition to the parts of 10 C.F.R. 31.5 (relating to certain detecting, measuring, gauging, or controlling devices and certain devices for producing light or an ionized atmosphere) incorporated by reference, general licensees subject to registration under 10 C.F.R. 31.5(c)(13)(i) or possessing general licensed devices containing 37 MBq (1 mCi) or more of accelerator-produced material, as determined on the date of manufacture, or 3.7 MBq (0.1 mCi) or more of radium-226 shall also comply with the following:

12.5.2.2 Conduct a physical inventory every six months to account for all sources or devices, or both, received and possessed under this subsection and do the following:

12.5.2.2.1 Maintain the physical inventory records for three years from the date of each inventory.

12.5.2.2.2 Furnish a report to the Department annually showing to the extent practicable, the make, model, serial number, isotope, source activity and location of each device. The report shall list
an individual to contact regarding questions about this report.

12.5.3 For portable devices, also comply with the following:

12.5.3.1 A person who initiates acquisition, transfer or disposal of a portable device shall notify the Department within 15 days of the action. Sending a portable device for calibration, maintenance or source replacement does not constitute transfer.

12.5.3.2 Portable devices may only be used by or under the direct supervision of individuals who have been instructed in the operating and emergency procedures necessary to ensure safe use.

12.5.3.3 For each individual that the licensee permits to use a portable device, the licensee shall maintain a record showing the type of device use permitted and the basis, such as training certificates, for that authorization. An individual’s record shall be kept for at least 3 years after the individual terminates association with the licensee.

12.5.3.4 Portable devices shall be secured from access by unauthorized personnel whenever the device is not under the direct surveillance of an individual authorized to use the device.

12.5.3.5 The licensee shall maintain a current sign out log at the permanent storage location of the portable device. Log entries shall be available for inspection by the Department for 3 years from the date of entry. The following information shall be recorded for each portable device:

12.5.3.5.1 The model and serial number of the device.

12.5.3.5.2 The name of the assigned user.

12.5.3.5.3 The locations and dates of use.

12.5.3.6 Emergency instructions shall accompany each portable device taken off the premises of the licensee.

12.5.4 Incidental radioactive material produced by a particle accelerator.

12.5.4.1 A general license is issued to possess radioactive material produced incidentally to the operation of a particle accelerator.
accelerator. The general license is also subject to the applicable provisions of this subsection and Subsections 1.0, 6.0, and 7.0 (relating to general provisions; standards for protection against radiation; and notices, instructions and reports to workers; inspections and investigations).

12.5.4.2 A licensee may transfer this radioactive material only under Subsection 6.0 and Subsection 18.0 (relating to transfer of radioactive material; and packaging and transportation of radioactive material).

12.5.4.3 A licensee may dispose of this radioactive material only with Department approval.

12.6 Specific licenses to manufacture or transfer certain items containing radioactive material.

12.6.1 Incorporation by reference

12.6.1.1 Except as provided in this subsection, the requirements of 10 C.F.R. Part 32 (relating to specific domestic licenses to manufacture or transfer certain items containing byproduct material) are incorporated by reference. The unofficial version can be accessed at http://www.nrc.gov/. The official version is also available in hard copy.

12.6.1.2 Notwithstanding the requirements incorporated by reference, Sections 32.1(c)(1), 32.8, 32.11, 32.12, 32.14, 32.15, 32.16, 32.18, 32.19, 32.20, 32.21, 32.21a, 32.22, 32.23, 32.25, 32.26, 32.27, 32.28, 32.29, 32.30, 32.31 and 32.32 are not incorporated.

12.6.1.3 Only the NRC can issue a license under 10 C.F.R. 32.11, 32.22, 32.26 and 32.30.

12.6.1.4 Licensing the incorporation of NARM into gas and aerosol detectors. An application for a specific license authorizing the incorporation of NARM into gas and aerosol detectors to be distributed to persons exempt under Subchapter B (relating to general provisions for radioactive material) will be approved if the application satisfies requirements equivalent to those in 10 C.F.R. 32.26—32.29. The
maximum quantity of radium-226 may not exceed 3.7 kBq (0.1 microcuries).

12.7 Specific Domestic Licenses of Broad Scope for Radioactive Material.

12.7.1 Incorporation by reference

12.7.1.1 Except as provided in this subsection, the requirements of 10 C.F.R. Part 33 (relating to specific domestic licenses of broad scope for byproduct material) are incorporated by reference. The unofficial version can be accessed at http://www.nrc.gov. The official version is also available in hard copy.

12.7.1.2 Notwithstanding the requirements incorporated by reference, Sections 33.8, 33.21 and 33.23 are not incorporated.

12.7.2 Inclusion of naturally occurring or accelerator-produced radioactive material (NARM)

The requirements of 10 C.F.R. 33, relating to specific licenses of broad scope for radioactive material, also apply to NARM.

12.8 Licensing of source material

12.8.1 Incorporation by reference. Except as provided in this subsection, the requirements of 10 C.F.R. Part 40 (relating to domestic licensing of source material) are incorporated by reference. The unofficial version can be accessed at http://www.nrc.gov. The official version is also available in hard copy.

12.8.2 Notwithstanding the requirements incorporated by reference, Sections 40.4; 40.6; 40.8; 40.12(b); 40.13 (c)(5)(iv), (j) and (m); 40.23; 40.27; 40.28; 40.31(i),(k),(l) and (m); 40.32(d) and (g) and those portions of paragraph (e) which apply to uranium enrichment and uranium hexafluoride facilities; 40.33; 40.38; 40.41(d), (e)(1), (e)(3), (g) and (h); 40.51(b)(6); 40.52; 40.53; 40.56; 40.64; 40.66; 40.67; 40.81; and 40.82; Appendix A to Part 40; and the words “common defense and security” in the definitions for “Commencement of Construction” and “Construction” in 10 C.F.R. 40.4 are not incorporated. In 10 C.F.R. 40.4, the definition of “Byproduct Material” includes NARM. In 10 C.F.R. 40.10, the reference to 10 C.F.R. 2, relating to deliberate
misconduct, is replaced with 18 V.S.A. § 1651-1657 and Radioactive Material Program Procedure Section 2.5, Enforcement, Escalated Enforcement and Administrative Actions. In 10 C.F.R. 40.4 the terms “Foreign Obligations” and “Reconciliation” are not incorporated. In 10 C.F.R. 40.4, the phrase “and any other material which the Commission, pursuant to the provision of section 51 of the Act, determines to be special nuclear material” is preserved without change. In 10 C.F.R. 40.10(b) the reference to 10 C.F.R. 2 subpart B is replaced by 18 V.S.A. § 130. In 10 CFR 40.60, reference to written reports means “Written reports must be sent to: Vermont Department of Health, 108 Cherry Street, Suite 201, Burlington, Vermont 05401, Attn: Radioactive Materials Program.”

12.8.3 Only the NRC can issue a license pursuant to 10 C.F.R. 40.52.

12.9 Licensing of special nuclear material

12.9.1 Incorporation by reference. Except as provided in this subsection, the requirements of 10 C.F.R. Part 70 (relating to domestic licensing of special nuclear material) are incorporated by reference. The unofficial version can be accessed at http://www.nrc.gov/. The official version is also available in hard copy. In section 70.10, the phrase “the procedures in 10 C.F.R. part 2 subpart B” is replaced with 18 V.S.A. § 130. In 70.19(a)(1), the terms Commission and Atomic Energy Commission remain.

12.9.2 Notwithstanding the requirements incorporated by reference, Sections 70.1(c), (d) and (e); 70.5; 70.6; 70.8; 70.13; 70.14; 70.20(a); 70.20(b); 70.21(a)(1), (c), (f), (g) and (h); 70.22(b), (c), (f), (g), (h), (i), (j), (k), (l), (m) and (n); 70.23(a)(6), (7), (8), (9), (10), (11) and (12) and (b); 70.23(a); 70.24; 70.25(a)(1); 70.31(c), (d) and (e); 70.32(a)(1), (4), (5), (6) and (7); 70.32(b)(1), (3) and (4), (c), (d), (e), (f), (g), (h), (i), (j) and (k); 70.37; 70.40; 70.42(b)(6); 70.44; 70.51(c); 70.52; 70.55(c)(1), (2) and (3); 70.56(c) and (d); 70.59; 70.60; 70.61; 70.64; 70.65; 70.66; 70.72; 70.73; 70.74; 70.76; 70.82; Appendix A to Part 70 and the words “common defense and security” in the definitions for “Commencement of Construction” and “Construction” in 10 C.F.R. 70.4 are not incorporated. In 10 C.F.R. 70.10, the reference to 10 C.F.R. 2, relating to deliberate misconduct, is replaced with 18 V.S.A. § 1651-1657 and Radioactive Material Program Procedures Section
2.5. Enforcement, Escalated Enforcement and Administrative Action. In 70.19(a)(1) and 70.19(c)(3), the terms “Commission or the Atomic Energy Commission” remains and does not mean the “Department.” In 10 C.F.R. 70.4, the phrase “and any other material which the Commission, pursuant to the provisions of section 51 of the Act, determines to be special nuclear material” is preserved without change. In 10 CFR 70.50(c), preparation and submission of reports, all communications are to be made to the Vermont Department of Health 108 Cherry Street, Suite 201, Attn: Radioactive Materials Program, Burlington Vermont 05401, and by telephone at 802-863-7200 for immediate and 24-hour reports.

12.9.3 In C.F.R. 70.42(b)(1), the word “Department” means the “US Department of Energy.”

12.10 Transfer of radioactive material.

The requirements of 10 C.F.R. 30.41 (relating to transfer of byproduct material) also apply to NARM.

12.10.1 Incorporation by reference. Except as provided in this subsection, the requirements of 10 C.F.R. 150.1, 150.2, 150.11 and 150.20 are incorporated by reference. The unofficial version may be accessed at http://www.nrc.gov/. An official hard copy version is also available.

12.10.2 The Department may withdraw, limit or qualify its acceptance of a specific license or equivalent licensing document issued by another agency, or product distributed under the licensing document, upon determining that the action is necessary to prevent a public health hazard as defined in 18 V.S.A. §2 (9).

12.10.3 Implementation of the requirements of this subsection regarding byproduct, source and special nuclear material is subject to paragraph 12.2 (relating to persons possessing a license for source, byproduct or special nuclear material in quantities not sufficient to form a critical mass on the date Vermont becomes an agreement state as published in the Federal Register).

13.0 Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material
13.1 **Purpose and scope.**

13.1.1 This subsection establishes the requirements for the physical protection program for any licensee that possesses an aggregated category 1 or category 2 quantity of radioactive material listed in Appendix A to 10 C.F.R. Part 37 Category 1 and Category 2 Radioactive Materials.

13.1.2 No provision of this subsection authorizes possession of licensed material.

13.2 **Incorporation by reference.**

13.2.1 Except as provided in this subsection, the requirements of 10 C.F.R. Part 37 (relating to physical protection of category 1 and category 2 quantities of radioactive materials) are incorporated by reference. The unofficial version can be accessed at [http://www.nrc.gov](http://www.nrc.gov). The official version is also available in hard copy.

13.2.2 Notwithstanding the requirements incorporated by reference, Sections 37.3(b)(2), 37.13, 37.73(d) and (e), 37.107 and 37.109 are not incorporated.

14.0 **Medical Use of Byproduct Material**

14.1 **Purpose and scope.**

14.1.1 This subsection prescribes requirements and provisions for the medical use of radioactive material and for issuance of specific licenses authorizing the medical use of radioactive material. These requirements and provisions provide for the protection of the public health and safety.

14.1.2 The requirements of this chapter are in addition to, and not in substitution for, other applicable requirements in these regulations.

14.2 **Incorporation by reference.**

14.2.1 Except as provided in this subsection, the requirements of 10 C.F.R. Part 35 (relating to medical use of byproduct material) are incorporated by reference. The unofficial version can be accessed at [http://www.nrc.gov](http://www.nrc.gov). The official version is also available in hard copy.
14.2.2 Notwithstanding the requirements incorporated by reference, Sections 35.8, 35.11(c)(1), 35.13(a)(1), 35.4001 and 35.4002 are not incorporated.

14.3 Authorization for calibration, transmission and reference sources.

Notwithstanding the incorporation by reference of 10 C.F.R. 35.65 (relating to authorization for calibration, transmission, and reference sources), a licensee authorized for medical use of radioactive materials may not receive, possess or use radium in total quantity of 3.7 MBq (100 µci) or more for check, calibration, transmission and reference use except as specifically authorized by the Department.

15.0 Licenses for Industrial Radiography and Radiation Safety Requirements for Industrial Radiographic Operations

15.1 General provisions.

15.1.1 Purpose and scope

15.1.1.1 This subsection establishes radiation safety requirements for persons using radiation sources for industrial radiography. Licensees and registrants who use radiation sources for industrial radiography shall comply with this subsection. The requirements of this subsection are in addition to and not in substitution for other applicable requirements in this rule.

15.1.1.2 Persons using only radiation-producing machines for industrial radiographic operations need not comply with paragraph 15.1.2 (relating to incorporation by reference) unless otherwise specified in paragraph 15.2 (relating to radiography using radiation-producing machines).

15.1.1.3 This subsection does not apply to the use of radiation sources for medical diagnosis or therapy.

15.1.2 Incorporation by reference

15.1.2.1 Except as provided in this subsection, the requirements of 10 C.F.R. Part 34 (relating to licenses for industrial radiography and radiation safety requirements for industrial radiographic operations) are incorporated by reference. The unofficial version can be accessed at http://www.nrc.gov/. The official version is also available in hard copy.
15.1.2.2 Notwithstanding the requirements incorporated by reference, Sections 34.5, 34.8, 34.121 and 34.123 are not incorporated.

15.1.3 Radiation safety program

15.1.3.1 A person who intends to use radiation-producing machines for industrial radiography shall have a program for training personnel, written operating procedures and emergency procedures, an internal review system and an organizational structure for radiographic operations which includes specified delegations of authority and responsibility for operation of the program. This program shall be approved by the Department before commencing industrial radiographic operations.

15.1.3.2 The registrant shall notify the Department of intended changes to the registrant’s radiation safety program and obtain Departmental approval.

15.1.4 Reciprocity. Out-of-State users of radiation producing machines for radiography shall meet the requirements of Subsection 19.0 and SSR Part B (relating to reciprocal recognition of out-of-State radiation machines).

15.1.5 Prohibitions. Use of radiation sources covered under this subsection for diagnosis or therapy on humans or animals is not permitted.

15.2 Radiography using radiation-producing machines.

15.2.1 Duties of personnel

15.2.1.1 The RSO shall assure that the radiation safety program of the registrant or licensee is implemented and suspend or terminate operations that are not being conducted in accordance with approved procedures or the Department’s requirements.

15.2.1.2 The radiographer is responsible to the registrant or licensee for following the procedures of the registrant or licensee and for complying with the Department’s requirements while industrial radiographic operations are being conducted.
15.2.1.3 Other than a radiographer, or a radiographer’s assistant who is under the personal supervision of a radiographer, an individual may not manipulate the controls or operate the equipment used in industrial radiographic operations.

15.2.1.4 The radiographer’s assistant may only use radiation producing machines or radiation survey instrumentation under the personal supervision of a radiographer.

15.2.1.5 The radiographer trainee is not permitted to operate radiation producing machines or radiation survey instrumentation.

15.2.2 Training of personnel

15.2.2.1 A registrant may not allow an individual to act as a radiographer or radiographer’s assistant unless that individual meets the requirements of paragraph 15.2.3 (relating to training and testing).

15.2.2.2 Persons performing field radiography shall comply with the training requirements in Table 4 (relating to subjects to be covered during the instruction of radiographers).

15.2.3 Training and testing

15.2.3.1 The registrant may not permit an individual to act as a radiographer until that individual has:

15.2.3.1.1 Been instructed in the subjects outlined in Table 4.

15.2.3.1.2 Received copies of this subsection, Subsections 6.0 and 7.0, and 10 C.F.R. 19 and 20 (relating to standards for protection against radiation; and notices, instructions and reports to workers; inspections and investigations), and copies of the license or certificate of registration and the operating and emergency procedures of the registrant or licensee.

15.2.3.1.3 Received instruction covering regulatory requirements, operating and emergency procedures and the use of radiation-producing machines and radiation survey instruments of the registrant or licensee.
15.2.3.1.4 Demonstrated competency and understanding of the information in this subsection to the satisfaction of the registrant or licensee as evidenced by the successful completion of a written test and a field examination.

15.2.3.2 The registrant or licensee may not permit an individual to act as a radiographer’s assistant until that individual has:

15.2.3.2.1 Received copies of, and instruction in, the applicable operating and emergency procedures and has been instructed in the use of sources of radiation and radiation survey instruments of the registrant or licensee.

15.2.3.2.2 Demonstrated that, under direct personal supervision of a radiographer, the individual is competent to use sources of radiation and radiation survey instruments as evidenced by the successful completion of a written or oral test and a field examination on the subjects relevant to being an assistant radiographer.

15.2.3.3 Records of the training required under paragraphs 15.2.3.1 and 15.2.3.2, including copies of written tests, dates of oral tests and field examinations, shall be maintained for inspection by the Department for 3 years following termination of employment by the individual or until the registration or license is terminated.

15.2.4 Audits and safety reviews of radiographers and radiographer’s assistants

15.2.4.1 The registrant or licensee shall review and provide for the safety and ongoing training needs of radiographers and radiographer’s assistants at least once during each calendar year.

15.2.4.2 The registrant or licensee shall conduct an annual inspection program of the job performance of each radiographer and radiographer’s assistant to ensure that operating and emergency procedures and this subchapter
and registration or license requirements for the registrant or licensee are followed. This audit program shall:

15.2.4.2.1 Include observation of the performance of each radiographer and radiographer’s assistant during an actual radiographic operation at intervals not to exceed 1 calendar year.

15.2.4.2.2 Provide that, if a radiographer or radiographer’s assistant has not participated in a radiographic operation for more than 6 months since the last annual inspection, the individual’s performance shall be observed and recorded when the individual next participates in a radiographic operation.

15.2.4.3 The registrant or licensee shall maintain records of the training set forth in paragraph 15.2.3 to include certification documents, written and field examinations, annual safety reviews and annual audits of job performance. Records shall be available for inspection by the Department for 3 years following the termination of employment of the individual or until the registration or license is terminated.

15.2.5 Reporting requirements

15.2.5.1 In addition to the reporting requirements in 6.7.1 and 6.7.2 (relating to reports of stolen, lost or missing licensed or registered sources of radiation; and notification of incidents and reportable events), each registrant or licensee shall provide to the Department, within 30 days of its occurrence, a written report on any of the following incidents involving machines or equipment used in radiographic operations:

15.2.5.1.1 The inability to terminate irradiation from a radiation producing machine.

15.2.5.1.2 An interlock failure during shielded room radiography.

15.2.5.2 The registrant or licensee shall include the following information in each report submitted under paragraph 15.2.5.1:

15.2.5.2.1 A description of the equipment problem.
15.2.5.2.2 The cause of the incident, if known or determined.
15.2.5.2.3 The manufacturer and model number of the equipment involved.
15.2.5.2.4 The place, date and time of the incident.
15.2.5.2.5 Actions taken to reestablish normal operations.
15.2.5.2.6 Corrective actions taken or planned to prevent reoccurrence.
15.2.5.2.7 The names and qualifications of personnel involved.

15.2.5.3 Reports of overexposures, required under 10 C.F.R. 20.2202 (relating to notification of incidents) or of excessive exposures, required under 10 C.F.R. 20.2203 (relating to reports of exposures, radiation levels and concentrations of radioactive material exceeding the limits) which involve the failure of safety components of radiography equipment shall also include, to the extent known, the information specified under paragraph 15.2.5.2. Complete information required in paragraph 15.2.5.2 shall be available in the 30-day follow-up report rule under 10 C.F.R. 20.2203(a).

15.2.6 Permanent radiographic installations
15.2.6.1 Permanent radiographic installations having high radiation area entrance controls of the types described in 10 C.F.R. 20.1601 and 20.1902 (relating to control of access to high radiation areas; and posting requirements) shall also meet the following requirements.
15.2.6.1.1 Each entrance that is used for personnel access to the high radiation area in a permanent radiographic installation shall have both visible and audible warning signals to warn of the presence of radiation. The visible signal shall be activated by radiation whenever the X-ray source is energized. The audible signal shall be actuated when an attempt is made to enter the installation while the X-ray source is energized.
15.2.6.1.2 The entrance control device or alarm system shall be tested for proper function prior to beginning operations on each day of use.

15.2.6.1.3 The radiographic exposure system may not be used if an entrance control device or alarm system is not operating properly. If an entrance control device or alarm system is not functioning properly, it shall be removed from service and repaired or replaced immediately. If no replacement is available, the facility may continue to be used provided that the registrant implements the continuous surveillance under 10 C.F.R. 34.51 and 34.52 (relating to surveillance; posting), 15.2.8 (relating to records required at field radiography sites) and uses an alarming ratemeter. Before the entrance control device or alarm system is returned to service, the radiation safety officer or an individual designated by the radiation safety officer shall validate the repair.

15.2.6.2 Records of the tests performed under paragraph 15.2.6.1 shall be maintained for inspection by the Department for 3 years.

15.2.7 Operating requirements

15.2.7.1 When radiographic operations are performed at a location other than a permanent radiographic installation, a minimum of two radiographic personnel shall be present to operate the X-ray device. At least one of the radiographic personnel shall be qualified as a radiographer. The other individual may be either a radiographer, a radiographer’s assistant or a radiographer trainee.

15.2.7.2 At each job site, the following shall be supplied by the registrant or licensee:

15.2.7.2.1 The appropriate barrier ropes and warning signs.

15.2.7.2.2 At least one operable, calibrated radiation survey instrument.
15.2.7.2.3 For each worker requiring monitoring, an individual personnel dosimeter that is processed and evaluated by an NVLAP processor.

15.2.7.2.4 An operable, calibrated direct reading dosimeter with a range of zero to 51.6 microcoulomb per kilogram (µC/kg) (200 milliroentgen) for each worker requiring monitoring.

15.2.7.3 An industrial radiographic operation may not be performed if any of the items in paragraph 15.2.7.2 is not available at the job site or is inoperable.

15.2.8 Records required at field radiography sites.
Each registrant or licensee conducting radiographic operations at a field radiography site shall maintain and have available for inspection by the Department at that job site, the following records or documents:

15.2.8.1 The certificate of registration, license or equivalent document which authorizes radiographic operations, and radiographic personnel certifications.

15.2.8.2 Operating and emergency procedures.

15.2.8.3 Relevant regulations of the Department.

15.2.8.4 Survey records required under this chapter for the period of operation at the site.

15.2.8.5 Daily direct reading dosimeter records for the period of operation at the site.

15.2.8.6 The current radiation survey meter calibration records for meters in use at the site. Acceptable records include tags or labels that are affixed to the survey meter.

15.2.9 Operating and emergency procedures
The operating and emergency procedures of the registrant or licensee shall include instruction in at least the following:

15.2.9.1 Handling and use of sources of radiation to be employed so that no individual is likely to be exposed to radiation in excess of the limits established in Subsection 6.0 (relating to standards for protection against radiation).

15.2.9.2 Methods and occasions for conducting radiation surveys and the proper use of survey meters.

15.2.9.3 Methods for controlling access to areas where radiographic operations are being conducted.

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VERMONT
DEPARTMENT OF HEALTH

Proposed Rule [Posting Date]

Page 39 of 86
15.2.9.4 Methods and occasions for locking and securing sources of radiation.
15.2.9.5 Personnel monitoring and the use of individual monitoring devices, including steps that are to be taken immediately by radiographic personnel when a direct reading dosimeter is found to be off-scale.
15.2.9.6 Methods and procedures for minimizing exposure to individuals in the event of an accident.
15.2.9.7 The procedure for notifying proper personnel in the event of an accident.
15.2.9.8 Maintenance of records required by the Department.
15.2.9.9 The inspection and maintenance of radiation-producing machines and survey meters.

15.2.10 Surveys and survey records
15.2.10.1 A survey with a calibrated radiation survey instrument shall be made after each radiographic exposure to determine that the emission of radiation has terminated.
15.2.10.2 Records of the surveys required by paragraph 15.2.10.1 shall be maintained for inspection by the Department for 3 years. If the survey has been used to determine an individual’s exposure, the records of the survey shall be maintained until the Department terminates the registration or license.

15.2.11 Utilization logs. A registrant or licensee shall maintain current logs, which shall be kept available for inspection by the Department for 3 years from the date of the event, showing for each radiation-producing machine, the following applicable information:
15.2.11.1 The identity (name and signature) of the operator to whom the radiation-producing machine is assigned.
15.2.11.2 The model and serial number of the radiation-producing machine.
15.2.11.3 The locations and dates of use.
15.2.11.4 The technique factors (tube kilovoltage, tube current, exposure time) used for each radiographic exposure.

15.2.12 Security. During each radiographic operation, the radiographer or radiographer’s assistant shall maintain direct surveillance of the
operation to protect against unauthorized entry into a high radiation area, except when one of the following exists:

15.2.12.1 The high radiation area is equipped with a control device or an alarm system as described in 10 C.F.R. 20.1601 and 20.1902(b) (relating to control of access to high radiation areas; and posting of high radiation areas).

15.2.12.2 The high radiation area is locked to protect against unauthorized or accidental entry.

15.2.13 Posting. Areas in which radiographic operations are being performed shall be conspicuously posted as required by 10 C.F.R. 20.1902 (relating to posting requirements).

15.2.14 Radiation survey meter requirements

15.2.14.1 A registrant or licensee shall maintain sufficient calibrated and operable radiation survey instruments to make physical radiation surveys as required by this subsection and Subsection 6.0 (relating to standards for the protection against radiation).

15.2.14.2 A radiographic operation may not be conducted unless calibrated and operable radiation survey instrumentation is available and used at each site where radiographic operations are conducted.

15.2.14.3 Immediately prior to first use at a site where radiographic operations are conducted and at the beginning of work shift changes thereafter, a radiation survey instrument shall be checked to ensure that it is operating properly by exposing the instrument to a reference source of radiation and observing its response. Instruments that fail to respond as expected may not be used.

15.2.15 Radiation survey meter calibration requirements

15.2.15.1 In addition to the requirements of paragraph 15.2.14 (relating to survey meter requirements), instruments required by this chapter shall have a range so that 0.516 µC/kg (2 mR) per hour through 258 µc/kg (1 R) per hour can be measured.

15.2.15.2 Each radiation instrument shall be calibrated:

15.2.15.2.1 At energies appropriate for use.

15.2.15.2.2 At intervals not to exceed 6 months.
15.2.15.2.3 After each instrument servicing, other than battery replacement.

15.2.15.2.4 To within an accuracy of +/- 20%.

15.2.15.2.5 At two points located approximately one-third and two-thirds of full scale on each scale of linear scale instruments; at mid-range of each decade and at two points of at least 1 decade for logarithmic scale instruments; and for digital instruments, at three points between 0.516 µC/kg (2 mR) and 258 µC/kg (1000 mR) per hour.

15.2.15.2.6 By a person authorized by the Department, the NRC or an agreement state.

15.2.15.3 Calibration records shall be maintained for inspection by the Department for 3 years after the date of calibration.

15.2.16 Personnel monitoring control

15.2.16.1 The registrant or licensee may not permit an individual to act as a radiographer or as a radiographer’s assistant unless, at all times during radiographic operations, each individual wears a direct reading dosimeter and a personnel dosimeter that is processed and evaluated by an NVLAP processor.

15.2.16.1.1 Personnel monitoring devices used to determine compliance with dose limits for the whole body shall be worn on the trunk of the body over the area most likely to receive exposure.

15.2.16.1.2 This does not relieve the registrant or licensee from providing peripheral monitoring devices such as ring finger dosimeters when appropriate.

15.2.16.1.3 Each personnel monitoring device shall be assigned to and worn by only one individual.

15.2.16.2 Film badges shall be replaced at intervals not to exceed 1 month. Other personnel dosimeters processed and evaluated by an accredited NVLAP processor shall be replaced at intervals not to exceed 3 months.
15.2.16.3 Direct reading dosimeters (DRDs) shall meet the criteria as in ANSI N13.5-1972, “Performance Specifications for Direct Reading and Indirect Reading Pocket Dosimeters for X- and Gamma-Radiation” published in 1972, inclusive of subsequent amendments or additions.

15.2.16.4 The use of DRDs is subject to the following requirements:

15.2.16.4.1 DRDs shall have a range of zero to 51.6 µC/kg (200 mR) and shall be rezeroed at the start of each work shift.

15.2.16.4.2 As a minimum, at the beginning and the end of each worker’s shift involving the use of a source of radiation, DRDs shall be read and the exposure values recorded.

15.2.16.4.3 Direct reading dosimeters shall be checked for correct response to radiation at periods not to exceed 1 year. A dosimeter may not be used for personnel monitoring unless the response is accurate within +/- 20% of the true radiation exposure. Records of dosimeter response checks shall be maintained for inspection by the Department for 3 years.

15.2.16.4.4 If an individual’s DRD indicates exposure that is “off-scale” beyond the range it can measure, industrial radiographic operations by that individual shall cease immediately and the individual’s personnel dosimeter shall be sent immediately for processing. The individual may not use any sources of radiation until the individual’s radiation dose has been determined.

15.2.16.5 Data on personnel exposure reported or recorded from personnel monitoring devices shall be kept for inspection by the Department until the certificate of registration or license is terminated or until the Department authorizes their disposition, in writing, following a determination by the Department that the records contain inaccurate personnel monitoring information.
15.2.17 Cabinet X-ray systems and baggage/package X-ray systems
15.2.17.1 Cabinet and baggage/package X-ray systems that are certified under 21 C.F.R. Chapter I, Subchapter J (relating to radiological health) shall also meet the requirement of 21 C.F.R. 1020.40 (relating to cabinet X-ray systems).

15.2.17.2 A cabinet X-ray system may not be energized unless all openings are securely closed and exposure to radiation from the system does not exceed the limits in 10 C.F.R. 20.1301 (relating to dose limits for individual members of the public). Each access door to the cabinet shall have an interlock that terminates the exposure whenever the door is opened. The enclosure shall be shielded so that every location on the exterior meets the conditions for an unrestricted area.

15.2.17.3 A registrant may not permit an individual to operate a cabinet X-ray system until the individual has received a copy of, and instruction in, the operating procedures for the X-ray system and has demonstrated competency in the use of the cabinet X-ray system and an understanding of the operating procedures.

15.2.17.4 The registrant shall perform radiation surveys to demonstrate compliance with 10 C.F.R. 20.1301 and maintain records of these surveys for inspection by the Department for 3 years:
15.2.17.4.1 Upon installation of the equipment.
15.2.17.4.2 Following a change in the initial arrangement, relocation of the unit, or following any maintenance requiring the disassembly or removal of any shielding component.
15.2.17.4.3 When a visual inspection reveals an abnormal condition.

15.2.17.5 The registrant shall test on-off switches, interlocks and safety devices at intervals not exceeding 1 year and make repairs as necessary to maintain all safety features including warning labels. Records of these tests shall be maintained for inspection by the Department for 3 years.
15.2.17.6 The registrant shall test on-off switches, interlocks and safety devices at intervals not exceeding 1 year and make repairs as necessary to maintain all safety features including warning labels. Records of these tests shall be maintained for inspection by the Department for 3 years.

15.2.18 **Shielded room X-ray radiography**

15.2.18.1 A room used for shielded room X-ray radiography shall be shielded so that every location on the exterior meets conditions for an unrestricted area and the only access to the room is through openings which are interlocked so that the radiation source will not operate unless all openings are securely closed and meet the requirements of 10 C.F.R. 20.1601 (relating to control of access to high radiation areas).

15.2.18.2 The operator shall conduct a physical radiation survey to determine that the radiation source is de-energized prior to each entry into the radiographic exposure area.

15.2.18.3 As an alternative to paragraph 15.2.18.2, the registrant may use an independent radiation monitoring system that displays the radiation intensity or displays when radiation levels have returned to their pre-irradiation levels.

15.2.18.4 With the exception of the provisions in paragraphs 15.1.3, 15.2.5 and 15.2.9 (relating to radiation safety program; reporting requirements; and operating and emergency procedures), shielded room radiography is exempt from all other provisions of this subsection.

15.2.19 **Field site radiography**

15.2.19.1 The operator shall conduct a physical radiation survey to determine that the radiation source is de-energized prior to each entry into the radiographic exposure area. Survey results and records of the boundary location shall be maintained and kept available for inspection by the Department for 3 years.

15.2.19.2 Mobile or portable radiation producing machines shall be physically secured to prevent tampering or removal by unauthorized personnel.

15.2.20 **X-ray detection systems for explosives, weapons and illegal items**
15.2.20.1 This section applies to X-ray systems that produce an image that may be used to screen for the presence of explosive devices or components, weapons, contraband or prohibited items. This section does not apply to cabinet and baggage/package X-ray systems covered under paragraph 15.2.17 (relating to cabinet X-ray systems and baggage/package X-ray systems).

15.2.20.2 An X-ray system used for detection of explosives, weapons or illegal items may not be used on human beings or animals without specific permission of the Department. X-ray systems that irradiate human beings for medical diagnosis are covered under Subsection 20.0 (relating to medical diagnostic and interventional X-ray and imaging systems).

15.2.20.3 Radiographic X-ray detection systems shall conform to the following:

15.2.20.3.1 The leakage radiation from the source assembly measured at a distance of 1 meter in any direction from the source may not exceed 25.8 µC/kg (100 mR) in 1 hour when the X-ray tube is operated at its leakage technique factors. Compliance shall be determined by measurements averaged over an area of 100 square centimeters with no linear dimension greater than 20 centimeters.

15.2.20.3.2 Portable X-ray systems shall be equipped with collimators which are capable of restricting the useful beam to the area of interest. Collimators shall provide the same degree of protection required in paragraph 15.2.20.3.1.

15.2.20.3.3 A means shall be provided to terminate the exposure after a preset time, a preset to image receptor (for example automatic exposure control or AEC) or a preset product of exposure time and tube current.

15.2.20.3.4 The X-ray control shall have a dead-man type exposure switch.
15.2.20.3.5 The X-ray controls shall indicate the technique factors, (that is, kilovoltage, tube current and exposure time or the product of tube current and exposure time).

15.2.20.3.6 The X-ray machine shall be labeled with a readily discernible sign bearing the radiation symbol and the words, “CAUTION RADIATION—THIS EQUIPMENT PRODUCES RADIATION WHEN ENERGIZED” or words having a similar intent, near any switch that energizes the X-ray tube.

15.2.20.3.7 For fixed radiographic equipment, an easily visible warning light shall be located adjacent to the X-ray tube and labeled with the words “X-RAY ON” or words having a similar intent. The warning light shall be illuminated only when the X-ray tube is energized or only when the shutter is open.

15.2.20.4 Fluoroscopic X-ray detection systems shall conform to the following:

15.2.20.4.1 The leakage radiation from the source assembly measured at a distance of 1 meter in any direction from the source may not exceed 25.8 µC/kg (100 mR) in 1 hour when the X-ray tube is operated at its leakage technique factors. Compliance shall be determined by measurements averaged over an area of 100 square centimeters with no linear dimension greater than 20 centimeters.

15.2.20.4.2 The X-ray machine shall be labeled with a readily discernible sign bearing the radiation symbol and the words, “CAUTION RADIATION—THIS EQUIPMENT PRODUCES RADIATION WHEN ENERGIZED” or words having a similar
To the extent practicable, the X-ray system (X-ray tube, imaging system and the object being irradiated) shall be completely enclosed so that every location on the exterior meets conditions for an unrestricted area and the only access to the room or enclosure is through openings which are interlocked so that the radiation source will not operate unless all openings are securely closed and meet the requirements of 10 C.F.R. 20.1601 (relating to control of access to high radiation areas).

The equipment shall be constructed so that, under conditions of normal use, the entire cross-section of the useful beam shall be attenuated by a primary protective barrier permanently incorporated into the equipment.

The X-ray control shall have a dead-man type exposure switch. Activation of the X-ray beam shall be possible only by continuous pressure on the exposure switch.

An easily visible warning light shall be located adjacent to the X-ray tube or on the outside of the enclosure and be labeled with the words “X-RAY ON” or words having a similar intent. This light shall be illuminated only when the X-ray tube is energized or only when the shutter is open.

Operating procedures for portable radiographic X-ray detection systems are as follows:

To the extent practicable, portable X-ray tube heads shall be supported by a stand.

To the extent practicable, supporting or positioning devices for the image receptor shall be used during radiation exposures.
15.2.20.5.3 Individuals, other than those whose presence is necessary to conduct the X-ray procedure, shall be located at least 2 meters away from the X-ray tube and the object being irradiated during exposures.

15.2.20.5.4 An individual may not be regularly employed to support the image receptor or object during radiation exposures.

15.2.20.6 Operating procedures for fixed radiographic X-ray detection systems are as follows:

15.2.20.6.1 A registrant shall test the safety and warning devices, including interlocks, at intervals not to exceed 12 months. Test records shall be maintained for inspection by the Department for 3 years after the test has been conducted.

15.2.20.6.2 Safety or warning devices that do not function properly shall be repaired in a timely manner.

15.2.20.6.3 If an X-ray detection system is required to be operated while in need of repair, procedures shall be modified to maintain the design level equivalent of safety or else the equipment may not be used.
Table 4
Subjects to be Covered During the Instruction of Radiographers

I. Fundamentals of Radiation Safety
   A. Characteristics of radiation
   B. Units of radiation dose and quantity of radioactivity
   C. Significance of radiation dose
      1. Radiation protection standards
      2. Biological effects of radiation dose
   D. Levels of radiation from radiation sources
   E. Methods of controlling radiation dose
      1. Working time
      2. Working distances
      3. Shielding
II. Radiation Detection Instrumentation to be Used
   A. Use of radiation survey instruments
      1. Operation
      2. Calibration
      3. Limitations
   B. Survey techniques
   C. Use of personnel monitoring equipment
      1. Film badges
      2. Thermoluminescent dosimeters
      3. Pocket dosimeters
III. Radiographic Equipment to be Used
   A. Remote handling equipment
   B. Radiographic exposure devices and sealed sources
   C. Storage containers
   D. Operation and control of X-ray equipment
IV. The Requirements of Pertinent Federal and State Regulations
V. The Licensee’s or Registrant’s Written Operating and Emergency Procedures
VI. Inspection and Maintenance Performed by the Radiographers
VII. Case Histories of Radiography Incidents
16.0 Licenses and Radiation Safety Requirements for Well Logging

16.1 Purpose and scope.
This subsection establishes radiation safety requirements for persons using radiation sources for well logging in a single well, radioactive markers, uranium sinker bars and subsurface tracer studies. Persons who use radiation sources for well logging operations shall comply with this subsection, which is in addition to and not in substitution for other applicable requirements of this rule.

16.2 Incorporation by reference.
16.2.4 Except as provided in this subsection, the requirements of 10 C.F.R. Part 39 (relating to licenses and radiation safety requirements for well logging) are incorporated by reference. The unofficial version can be accessed at http://www.nrc.gov/ . The official version is also available in hard copy.
16.2.5 Notwithstanding the requirements incorporated by reference, Sections 39.5, 39.8, 39.101 and 39.103 are not incorporated.

16.3 Particle accelerators.
16.3.4 A licensee or registrant may not permit aboveground 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 10 C.F.R. 20.1301 (relating to radiation dose to, and dose limits for individual members of the public) are met.
16.3.5 The use of particle accelerators for well logging shall be conducted under the licensing provisions of Subsection 22.0 (relating to radiation safety requirements for particle accelerators).

17.0 Licenses and Radiation Safety Requirements for Irradiators

17.1 Purpose and scope.
17.1.1 This subsection contains the requirements for the issuance of a license authorizing the use of radioactive materials in sealed sources to irradiate objects or materials with gamma radiation.
17.1.2 The requirements of this subsection are in addition to, and not in substitution for, other applicable requirements in this regulation.

17.2 Incorporation by reference.
17.2.1 Except as provided in this subsection, the requirements of 10 C.F.R. Part 36 (relating to licenses and radiation safety requirements for irradiators) are incorporated by reference. The unofficial version can be accessed at http://www.nrc.gov/. The official version is also available in hard copy.

17.2.2 Notwithstanding the requirements incorporated by reference, Sections 36.5, 36.8, 36.91, 36.93 and the words “common defense and security” in the definitions for “Commencement of Construction” and “Construction” in 10 C.F.R. 36.2 are not incorporated.

18.0 Packaging and Transportation of Radioactive Material

18.1 Purpose and scope.

This subsection establishes requirements for packaging, preparation for shipment and transportation of radioactive material. This subsection applies to a person who transports radioactive material or delivers radioactive material to a carrier for transport.

18.2 Incorporation by reference.

18.2.1 Except as provided in this subsection, the requirements of 10 C.F.R. Part 71 (relating to packaging and transportation of radioactive material) are incorporated by reference. The unofficial version can be accessed at http://www.nrc.gov/. The official version is also available in hard copy.

18.2.2 Notwithstanding the requirements incorporated by reference, Sections 71.2; 71.6; 71.11; 71.14(b); 71.19; 71.31; 71.33; 71.35; 71.37; 71.38; 71.39; 71.41; 71.43; 71.45; 71.51; 71.55; 71.59; 71.61; 71.63; 71.64; 71.65; 71.70; 71.71; 71.73; 71.74; 71.75; 71.77; 71.85(a), (b) and (c); 71.91(b); 71.99; 71.100; 71.101(c)(2), (d) and (e); 71.107; 71.109; 71.111; 71.113; 71.115; 71.117; 71.119; 71.121; 71.123 and 71.125 are not incorporated. In 10 C.F.R. 71 Subpart H the terms “Certificate of Compliance,” “certificate holder,” and “applicant for CoC” apply only to the NRC. In 10 C.F.R. 71.17(c)(3), the submission required before the first use of a NRC approved package should be sent to the NRC, ATTN: Document Control Desk, Director, Division of Spent Fuel Storage and Transportation, Office of Nuclear Material Safety and Safeguards, using an appropriate method listed in § 71.1(a), the
licensee’s name and license number and the package identification number specified in the package approval.

18.3 Transport of Licensed Material.

In addition to the incorporation by reference of 10 C.F.R. Part 71 (relating to packaging and transportation of radioactive material), if VSA Title 23 (relating to interstate motor carrier safety requirements; intrastate motor carrier requirements; and hazardous materials transportation) or the regulations of the United States Department of Transportation in 49 C.F.R. Parts 171—180 and 388—397 do not apply to a shipment of licensed material, the licensee shall conform to the standards and requirements of those regulations to the same extent as if the shipment was subject to the regulations.
Section III. Radiation-Producing Machines

19.0 Registration of Radiation Machine Facilities, Services and Associated Healthcare Professionals. This section does not pertain to radioactive materials.

19.1 Purpose and scope.

19.1.1 This subsection establishes requirements for the registration of radiation-producing machines and radiation-producing machine service providers. A person who possesses a radiation-producing machine or provides services described in this chapter shall comply with this subsection.

19.1.2 In addition to the requirements of this subsection, all registrants are subject to the applicable provisions of Section I Overview.

19.2 Incorporation by reference.

All registered entities shall comply with the Conference of Radiation Control Program Directors (CRCPD) Suggested State Regulations (SSRs) Part B, Registration of Radiation Machine Facilities, Services and Associated Healthcare Professionals. This can be accessed at:
http://www.crcpd.org/page/SSRCRs.

19.3 Notwithstanding the requirements incorporated by reference:

19.3.1 Section B.3 regarding licensure of radiation machine service providers does not apply until 2 years after these rules are promulgated.

19.3.2 Section B.5 regarding shielding plan review submission to the State for review and approval does not apply to dental and podiatric registrants.

19.3.3 Section B.6.b regarding radiation safety officer requirements and responsibilities does not apply to dental and podiatric registrants.

19.3.4 Section B.16 on reciprocal recognition of out-of-state radiation machines temporarily used in Vermont. They are registered as permanent or temporary in-state machines.

19.3.5 SSR Sections B.1.b and c, B.17.e, Appendix B paragraph 2(c), Appendix C paragraph 2(a)(2)(g), and Appendix D paragraph 2 are not incorporated by reference.
20.0 Medical Diagnostic & Interventional X-Ray & Imaging Systems

20.1 Purpose and scope.

This subsection establishes requirements, for which a registrant is responsible, for use of diagnostic and interventional X-ray equipment and imaging systems by, or under the supervision of an individual authorized by and licensed in accordance with Vermont State Statutes to engage in the healing arts or veterinary medicine. The provisions of this subsection are in addition to and not in substitution for other applicable provisions of these regulations. Some registrants may also be subject to the requirements of Subsection 23.0 (relating to therapeutic radiation machines) of these regulations.

20.2 Incorporation by reference.

20.2.1 All registered entities shall comply with the Conference of Radiation Control Program Directors (CRCPD) Suggested State Regulations (SSRs) Part F, Medical Diagnostic and Interventional X-Ray and Imaging Systems. This can be accessed at: http://www.crcpd.org/page/SSRCRs.

20.2.2 Notwithstanding the requirements incorporated by reference, SSR Sections F.1., F.3.a.i(2), F.3.a.xxi, F.3.a and F.15.b are not incorporated by reference.

21.0 Radiation Safety Requirements for Non-Healing Arts Radiation Generating Devices

21.1 Purpose and scope.

This subsection establishes the requirements for the use of analytical X-ray equipment, X-ray gauging equipment, electron microscopes, electron beam welders and X-ray calibration systems. Registrants who use analytical X-ray equipment, X-ray gauging equipment, electron microscopes, electron beam welders or X-ray calibration systems shall comply with this subsection. The requirements of this subsection are in addition to, and not in substitution for, other applicable provisions of this regulation.

21.2 Incorporation by reference.

21.2.1 All registered entities shall comply with the Conference of Radiation Control Program Directors (CRCPD) Suggested State Regulations (SSRs) Part H, Radiation Safety Requirements for Non-Healing Arts
Radiation Generating Devices. This can be accessed at: http://www.crcpd.org/page/SSRCRs.


22.0 Radiation Safety Requirements for Particle Accelerators

22.1 Purpose and scope.

This subsection establishes radiation safety requirements for persons utilizing particle accelerators for industrial and research purposes. Persons who use particle accelerators shall comply with this subsection. The requirements in this subsection are in addition to and not in substitution for other applicable requirements of these regulations, including those of Subsection 23.0. Radiation safety requirements for particle accelerators used in the healing arts are found in Subsection 23.0.

22.2 Incorporation by reference.

22.2.1 All registered entities shall comply with the Conference of Radiation Control Program Directors (CRCPD) Suggested State Regulations (SSRs) Part I, Radiation Safety Requirements for Particle Accelerators. This can be accessed at: http://www.crcpd.org/page/SSRCRs.

22.2.2 Notwithstanding the requirements incorporated by reference, SSR Sections I.1.b, I.3.a, I.6.a.ii, I.7.b, and I.12.a and b are not incorporated by reference.

22.3 Incidental radioactive material produced by a particle accelerator.

A general license is issued to possess radioactive material produced incidentally to the operation of a particle accelerator. The general license is also subject to the applicable provisions of this subsection and Section I Overview. A licensee may transfer this radioactive material only under Subsection 6.0 and Subsection 18.0 (relating to transfer of radioactive material; and packaging and transportation of radioactive material). A licensee may dispose of this radioactive material only with Department approval.

23.0 Therapeutic Radiation Machines
23.1 **Purpose and scope.**

23.1.1 This subsection establishes requirements, for which the registrant is responsible, for use of therapeutic radiation machines. The provisions of this subsection are in addition to, and not in substitution for, other applicable provisions of these regulations. This subsection shall also apply to veterinary medicine.

23.1.2 The use of therapeutic radiation machines shall be by, or under the supervision of, a licensed practitioner of the healing arts or veterinarian.

23.2 **Incorporation by reference.**

23.2.1 All registered entities shall comply with the Conference of Radiation Control Program Directors (CRCPD) Suggested State Regulations (SSRs) Part X, Therapeutic Radiation Machines. This can be accessed at: [http://www.crcpd.org/page/SSRCRs](http://www.crcpd.org/page/SSRCRs).

Section IV. Criteria Applicable to Operating or Decommissioning Nuclear Reactor Facilities Relating to Members of the Public

24.0 Criteria Applicable to Operating or Decommissioning Nuclear Reactor Facilities Relating to Members of the Public

The maximum permissible total effective dose equivalent of members of the public in unrestricted areas from all regulated uses of ionizing radiation shall be kept as low as reasonably achievable (ALARA) and shall not exceed the values specified below:

24.1 Discharges of radioactive materials and direct gamma radiation to unrestricted areas shall be controlled as follows:

24.1.1 Gaseous Effluents: The annual committed effective dose equivalent limit for an individual in an unrestricted area due to plant emissions of radioactive noble gases is 5 millirem. The committed effective dose equivalent from noble gases is calculated using noble gas concentrations in air samples obtained by the Department and as reported by Vermont Yankee Nuclear Power Station (VYNPS).

24.1.2 Liquid Effluents. The annual committed effective dose equivalent limit for an individual in an unrestricted area, due to plant discharges of liquid effluents is 5 millirem. The committed effective dose equivalent from liquid effluents is calculated using liquid effluent concentrations in water samples obtained by the Department and as reported by VYNPS.

24.1.3 Radioiodine. The annual committed effective dose equivalent limit of an individual in an unrestricted area due to plant emissions of radioiodine is 5 millirem. The committed effective dose equivalent from radioiodines is calculated using radioiodine concentrations in air samples obtained by the Department and as reported by VYNPS.

24.1.3 Radioactive Particulates. The annual committed effective dose equivalent limit for an individual in an unrestricted area due to plant
emissions of radioactive particulates is 5 millirem. The committed effective dose equivalent from radioactive particulates is calculated using radioactive particulate concentrations in air samples obtained by the Department and as reported by VYNPS.

24.1.4 *Direct Gamma Radiation.* The annual effective dose equivalent limit for a member of the public in an unrestricted area due to plant emanations of direct gamma radiation is 5 millirem. For the purpose of this subsection, a measured exposure value of 20 milliroentgen per year above background radiation at any point on the site boundary bordered by land shall be considered equivalent to a 5 millirem effective dose equivalent for a member of the public in an unrestricted area.

24.1.5 If any site boundary, bordered by land, quarterly measured exposure value exceeds 10 milliroentgen above background radiation, VYNPS shall take the actions described in Subsection 10.0.

24.2 Compliance with Dose Limits for Members of the Public

24.2.1 VYNPS shall submit an annual report to the Department detailing the surveys and calculations of discharges of all radioactive materials and direct gamma radiation from all operations and activities at the plant and specifically addressing each of the applicable criteria specified in this rule. The annual report shall be due no later than May 15 for the prior calendar year.

24.2.1 VYNPS shall submit monthly reports to the Department detailing the surveys and calculations of direct gamma radiation from all operations and activities at the plant and specifically addressing the quarterly and annual direct gamma radiation exposure limits specified in this rule. The monthly reports shall include copies of all records of all instruments used to monitor public exposure, including all records of calibration of the main steam line radiation monitors and all reports relevant to the off-site dose calculation manual issued or created during the report period. The monthly reports shall be due no later than the 15th of the month for the prior calendar month.
24.2.1.1 For purposes of the annual and monthly reports, VYNPS shall calculate the committed effective dose equivalent of discharges of radioactive materials and shall report the measured exposure values of direct gamma radiation to unrestricted areas as provided in the most current VYNPS Off-Site Dose Calculation Manual as approved by the Nuclear Regulatory Commission, and shall report all measured exposure values from all other instruments used by VYNPS to monitor public exposure.

24.2.1.2 VYNPS shall provide any other information requested by the Department relating to the information and underlying data and calculations in the annual and monthly reports.

24.3 VYNPS shall take the following actions as soon as it becomes evident that the quarterly or annual committed effective dose equivalents or measured exposure values exceed, or may exceed, the limits specified in this rule, but in no event later than the last day of the calendar quarter in which the discharge exceeds these values:

24.3.1 Immediately report the discharge or direct gamma radiation exceedance to the Department.

24.3.1 Immediately make an investigation to identify the causes of the exceedance, or anticipated exceedance, of maximum limits for committed effective dose equivalent or measured exposure values, including an evaluation of all discharges of radioactive materials or direct gamma radiation that contributed to the exceedance, and initiate a program designed to ensure that future discharges will be maintained at or below values not likely to cause exceedance of the maximum limits for committed effective dose equivalent or measured exposure values specified in this rule. As soon as possible, VYNPS shall report to the Department the action taken or proposed to be taken to achieve immediate reduction of the discharges for the Department's approval.

24.3.2 VYNPS shall implement the plan approved by the Department with all reasonable speed.

24.3.3 Within 14 days, but in no event later than 10 days after the end of the calendar quarter, submit a report to the Department detailing the
actions described above and providing verification of the completion of the implementation of the plan approved by the Department.

24.4 Independent compliance monitoring by the Department.

The Department shall conduct environmental surveys and sampling and shall deploy appropriate instruments to measure discharges of radioactive materials and direct gamma radiation emanations from VYNPS. The Department shall use that information to determine compliance with the requirements established in this rule.

24.5 Inspections.

All regulated entities who receive, possess, use or transfer sources of ionizing radiation shall:

24.5.1 Provide the Commissioner with copies of all reports furnished to the NRC related to radioactive effluent discharges and gamma radiation emanations under normal or abnormal conditions.

24.5.2 Permit the Commissioner at all times the opportunity to inspect and evaluate sources of radiation and the premises and facilities wherein such sources of radiation are used or stored, and shall make available pertinent data, as well as records and reports as may be required by the Department.

24.5.3 Grant to the Commissioner access to all records pertaining to the radiological health and safety of employees, to discharges of radioactive material and gamma radiation emanations to the environment, and to any effect of the operation of the facility upon the environment.

24.5.4 Provide the same notice to the Commissioner of any radiological incident and reports thereof and in the same manner as provided to the NRC.

24.5.5 Permit the Commissioner to make unscheduled visits to the regulated facility for the purpose of obtaining samples and surveys for analysis.

24.5.6 Upon request by the Commissioner, VYNPS shall furnish advance notification of each scheduled calibration of effluent monitors and shall permit the Commissioner to be present during such calibration.
24.5.7 Upon request by the Commissioner, VYNPS shall share samples of environmental media for purposes of data correlation.

24.6 Enforcement.

24.6.1 Whenever the Department has reasonable grounds to believe that there has been a violation of any of the provisions of this rule, the Department may take appropriate action as provided in this subsection or otherwise provided in law at 18 V.S.A. Ch. 32, to protect the public health and safety.

24.6.2 If an inspection, including the Department’s independent compliance monitoring of Vermont Yankee Nuclear Power Station, indicates that the regulated entity is not in compliance with the requirements of this rule, the Department shall notify the regulated entity in writing regarding any deficiencies.

24.6.3 The notice shall include specific required corrective actions necessary for the regulated entity to take to regain compliance with this rule and may include interim corrective actions, such as requiring further investigation of the circumstances giving rise to the notice, or ceasing use of the sources of radiation until full compliance is restored, or such other action deemed necessary by the Department to protect the public health and safety is completed.

24.6.4 If the Department determines that an enforcement action is appropriate, or if timely and satisfactory compliance with a notice issued pursuant to paragraph 24.6.3 has not been achieved, the Department shall issue a notice of violation in writing.
PART 5. CHAPTER 3
RADIOLOGICAL HEALTH

SUBCHAPTER 1. RADIATION PROTECTION

Section:
5-301. Purpose.
5-302. Scope.
5-303. Definitions.
5-304. Exemptions.
5-305. Standards.
5-306. Inspections.
5-308. Registration.
5-309. Transportation.

SUBCHAPTER 1. RADIATION PROTECTION

Section 5-301. Purpose, Authority, Effective Date.

Purpose: This rule establishes standards for the control of ionizing radiation for
the protection of occupational and public health and safety and implements the provisions
of 18 V.S.A. Chapter 32. This rule regulates x-ray and other radiographic diagnostic
equipment used by physicians, dentists and other health professionals, occupational
sources of radiation, and the radiation exposure values at the site boundary of the
Vermont Yankee Nuclear Power Station (VYNPS).

This rule sets maximum limits in terms of the dose an individual may receive
depending on the source and type of ionizing radiation. The dose limits are established
both for people who work with radioactive materials or equipment and for members of
the public exposed to ionizing radiation in unrestricted areas from the VYNPS. For
purposes of the dose limits established in this rule for the VYNPS site boundary, a maximum exposure value is established as a proxy to assure that no individual would be exposed to a dose in excess of the established limit.

Authority: This rule is adopted under the authority of 3 V.S.A. §§ 801(b)(11) and 3003(a) and 18 V.S.A. § 1652(c).

Effective Date: All provisions of this rule shall be effective on January 1, 2010.

Section 5-302. Scope.

This rule applies to all persons who receive, possess, use or transfer sources of ionizing radiation except that nothing in these regulations shall be construed to limit the kind or amount of radiation that may be applied intentionally to a patient for diagnostic or therapeutic purposes by or under the direction of a practitioner of the healing arts licensed by the State of Vermont.

Section 5-303. Definitions.

(1) “Absorbed dose” means the energy imparted by ionizing radiation per unit of mass of irradiated material. The units of absorbed dose are the rad and the gray (Gy).

(2) “As low as is reasonably achievable” (ALARA) means making every reasonable effort to maintain exposures to radiation as far below the dose limit in this rule as is practical consistent with the purpose for which the regulated activity is undertaken, taking into account the state of technology, and the economies of improvements in relation to the benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and regulated materials in the public interest.

(3) “Background radiation” means radiation from cosmic sources, naturally occurring radioactive material, including radon (except as a decay product of source or special nuclear material); and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the regulated entity.
“Background radiation” does not include radiation from source, byproduct, or special nuclear materials regulated by this rule.

(4) “Bioassay” (radiobioassay) means the determination of kinds, quantities or concentrations, and, in some cases, the locations of radioactive material in the human body, whether by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed from the human body.

(5) “Board” means the Vermont Board of Health.

(6) “Commissioner” means the Commissioner of the Vermont Department of Health, or designee.

(7) “Committed dose equivalent” (HT,50) means the dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by an individual during the 50-year period following intake.

(8) “Committed effective dose equivalent” (HE,50) is the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues (HE,50 = \( \Sigma W_T HT,50 \)).

(9) “Controlled area” means an area, outside of a restricted area but inside the site boundary, access to which can be limited by the regulated entity for any reason.

(10) “Curie” (Ci) is defined as 3.7 x 1010 disintegrations per second. Commonly used submultiples of the curie are millicurie (mCi) and the microcurie (\( \mu \)Ci):

1. One millicurie = 0.001 curie
2. One microcurie = 0.000001 curie

(11) “Declared pregnant woman” means a woman who has voluntarily informed the regulated entity, in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared pregnant woman withdraws the declaration in writing or is no longer pregnant.

(12) “Department” means the Vermont Department of Health.
(13) “Dose equivalent” (HT) means the product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The units of dose equivalent are the rem and sievert (Sv). Other necessary modifying factors include the specific energy or spectrum of energies of radiation; the specific size and shape of the source of radiation and radiation detector; the specific radiation scattering characteristics in the environment; differences in temperature, humidity and atmospheric pressure of the radiation detector and radiation environment; limitations of the radiation detector; characteristics of the specific tissues absorbing the radiation; and differences in physiological responses in specific persons absorbing the radiation.

(14) “Effective dose equivalent” (HE) is the sum of the products of the dose equivalent to the organ or tissue (HT) and the weighting factors (WT) applicable to each of the body organs or tissues that are irradiated (HE = Σ WT HT).

(15) “Embryo/fetus” means the developing human organism from conception until the time of birth.

(16) “Exposure” means being exposed to ionizing radiation or to radioactive material. The unit of measurement of external exposure is the roentgen (R).

(17) “Exposure value” means the numerical value of the measured exposure in units of milliroentgen or roentgen where 1 roentgen equals exactly 2.58 x 10^-4 coulombs per kilogram of air at standard temperature and pressure.

(18) “External dose” means that portion of the dose equivalent received from radiation sources outside the body.

(19) “Gray” (Gy) is the SI unit of absorbed dose. One gray is equal to an absorbed dose of 1 Joule/kilogram (100 rads).

(20) “Individual” means any human being.

(21) “Individual monitoring” means—(1) The assessment of dose equivalent by the use of devices designed to be worn by an individual; (2) The assessment of committed
effective dose equivalent by bioassay or by determination of the time-weighted air concentrations to which an individual has been exposed; or (3) The assessment of dose equivalent by the use of survey data.

(22) “Licenee” means the holder of a license issued by the NRC.

(23) “Limits” (dose limits) means the permissible upper bounds of radiation doses.

(24) “Member of the public” means any individual except when that individual is receiving an occupational dose.

(25) “Minor” means an individual less than 18 years of age.

(26) “Monitoring” (radiation monitoring, radiation protection monitoring) means the measurement of radiation levels, concentrations, surface area concentrations or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses.

(27) “NRC” means the Nuclear Regulatory Commission or its duly authorized representatives.

(28) “Occupational dose” means the dose received by an individual in the course of employment in which the individual’s assigned duties involve exposure to radiation or to radioactive material from regulated and unregulated sources of radiation, whether in the possession of the regulated entity or other person. Occupational dose does not include doses received from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released, from voluntary participation in medical research programs, or as a member of the public.

(29) “Public dose” means the dose received by a member of the public from exposure to radiation or to radioactive material released by a regulated entity, or to any other source of radiation under the control of a regulated entity. Public dose does not include occupational dose or doses received from background radiation, from any medical administration the individual has received, from exposure to individuals administered

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VERMONT
DEPARTMENT OF HEALTH

Proposed Rule

[Posting Date]

Page 67 of 86
radioactive material and released, or from voluntary participation in medical research programs.

(30) “Quarter” means a period of time equal to one-fourth of the year observed by the regulated entity (approximately 13 consecutive weeks), providing that the beginning of the first quarter in a year coincides with the starting date of the year and that no day is omitted or duplicated in consecutive quarters.

(31) “Rad” is the special unit of absorbed dose. One rad is equal to an absorbed dose of 100 ergs/gram or 0.01 joule/kilogram (0.01 gray). A subunit of the rad is the millirad. 1 millirad = 0.001 rad.

(32) “Radiation” (ionizing radiation) means alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in this rule, does not include non-ionizing radiation, such as radio-or microwaves, or visible, infrared, or ultraviolet light.

(33) “Radioactive materials’ means all materials that are determined to be a source of ionizing radiation.

(34) “Registrant” means a person registered with the Department pursuant to this rule.

(35) “Regulated entity” means all persons who receive, possess, use or transfer sources of ionizing radiation in the State of Vermont.

(36) “Rem” is the special unit of any of the quantities expressed as dose equivalent. The dose equivalent in rems is equal to the absorbed dose in rads multiplied by the quality factor (1 rem = 0.01 sievert). A subunit of the rem is millirem. 1 millirem = 0.001 rem.

As used in this rule, the quality factors for converting absorbed dose to dose equivalent are shown in Table 1.

<table>
<thead>
<tr>
<th>TABLE 1 — Quality Factors and Absorbed Dose Equivalencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of radiation</td>
</tr>
</tbody>
</table>

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VERMONT DEPARTMENT OF HEALTH

Proposed Rule [Posting Date]

Page 68 of 86
Quality Factor (Q)
Absorbed dose equal to a unit dose equivalent\textsuperscript{a}
\textit{X}, gamma, or beta radiation
\texttt{11}
\textit{Alpha particles, multiple-charged particles, fission fragments and heavy particles of unknown charge}
\texttt{20 0.05}
Neutrons of unknown energy
\texttt{10 0.1}
High-energy protons
\texttt{10 0.1}
\textsuperscript{a}Absorbed dose in rad equal to 1 rem or the absorbed dose in gray equal to 1 sievert.

(37) Roentgen (R) is a measure of exposure and is equivalent to \(2.58 \times 10^{-4}\) coulombs per kilogram in air at standard temperature and pressure. A subunit of the roentgen is the milliroentgen (mR). 1 mR equals 0.001 R.

(38) “Sievert” is the SI unit of any of the quantities expressed as dose equivalent. The dose equivalent in sieverts is equal to the absorbed dose in grays multiplied by the quality
factor (1 Sv=100 rems):

(39) “Site boundary” means that line beyond which the land or property is not owned, leased, or otherwise controlled by the regulated entity.

(40) “Survey” means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. When appropriate, such an evaluation includes a physical survey of the location of radioactive material and measurements or calculations of levels of radiation, or concentrations or quantities of radioactive material present.

(41) “Total Effective Dose Equivalent” (TEDE) means the sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

(42) “Unrestricted Area means an area, access to which is neither limited nor controlled by the regulated entity.

(43) “VYNPS” means the Vermont Yankee Nuclear Power Station, the entity licensed by the NRC to operate the plant and its owners.

(44) “Weighting factor” WT, for an organ or tissue (T) is the proportion of the risk of stochastic effects resulting from irradiation of that organ or tissue to the total risk of stochastic effects when the whole body is irradiated uniformly. For calculating the effective dose equivalent, the values of WT are:

<table>
<thead>
<tr>
<th>ORGAN DOSE WEIGHTING FACTORS</th>
<th>Organ or tissue WT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gonads</td>
<td>0.25</td>
</tr>
<tr>
<td>Breast</td>
<td>0.15</td>
</tr>
<tr>
<td>Red bone marrow</td>
<td>0.12</td>
</tr>
<tr>
<td>Lung</td>
<td>0.12</td>
</tr>
<tr>
<td>Thyroid</td>
<td>0.03</td>
</tr>
<tr>
<td>Bone surfaces</td>
<td>0.03</td>
</tr>
</tbody>
</table>
Remainder 0.301
Whole Body 1.002

1.0.30 results from 0.06 for each of 5 "remainder" organs (excluding the skin and the lens of the eye) that receive the highest doses.

2. For the purpose of weighting the external whole body dose (for adding it to the internal dose), a single weighting factor, WT = 1.0, has been specified. The use of other weighting factors for external exposure will be approved on a case-by-case basis until such time as specific guidance is issued.

(45) "Whole body" means, for purposes of external exposure, head, trunk (including male gonads), arms above the elbow, or legs above the knee.

(46) "Year" means the period of time beginning in January used to determine compliance with the provisions of this part. The regulated entity may change the starting date of the year used to determine compliance by the regulated entity provided that the change is made at the beginning of the year and that no day is omitted or duplicated in consecutive years.

Section 5-304. Exemptions.

The following materials, machines and conditions are exempt from these regulations:

(A) Radioactive materials of an equivalent specific radioactivity not exceeding that of natural potassium. (10⁻⁹ curies per gram of potassium).

(B) Quantities of byproduct, source, accelerator produced, and special nuclear materials exempted from licensing requirements of the U.S. Nuclear Regulatory Commission.

(C) Domestic television receivers, providing the effective dose rate at 5 cm from any outer surface is less than 0.5 mrem per hour.
(D) Other electrical equipment that produces radiation incidental to its operation for other purposes, providing the effective dose rate to the whole body at the point of nearest approach to such equipment when any external shielding is removed does not exceed 0.5 rem per year. The production, testing or factory servicing of such equipment shall not be exempt.

(E) Radiation machines which cannot be used in such manner as to produce radiation. (For example, X-ray machines in transport or electrical equipment in storage).

(F) Radioactive material, except as specified in Section 5-309, being transported across the state in conformance with regulations of any Federal agency having jurisdiction over safety in interstate commerce.

(G) Excreta from individuals undergoing medical diagnosis or therapy with radioactive materials are exempt from any limitation contained in this regulation.

(H) Other sources of radiation that the Department finds should be exempted.

Section 5-305. Standards.

(A) The Department shall make use of the best scientific information, recommendations and guidelines such as those contained in the reports and other publications of the National Council on Radiation Protection and Measurements, the National Institute of Standards and Technology, the Health Physics Society, the International Commission on Radiological Protection, the American Nuclear Society, the Food and Drug Administration, the Environmental Protection Agency, the Nuclear Regulatory Commission, the Conference of Radiation Control Program Directors and the American National Standards Institute, as applicable, in the interpretation and implementation of this rule.

(B) Maximum Permissible Total Effective Dose Equivalent
Except activities regulated by subsection 5-305(D) for VYNPS, the maximum permissible total effective dose equivalent of individuals from all regulated uses of ionizing radiation shall be kept as low as reasonably achievable (ALARA) and shall not exceed the values specified below:

1. 0.5 rem for the fetus during the entire gestation period from occupational radiation exposure of a declared pregnant woman.
2. 0.1 rem per year for minors under 18 years of age from occupational radiation exposure or from radiation exposure received during educational or training activities.
3. 0.1 rem per year for members of the public from any source of ionizing radiation.
4. 5.0 rem per year from occupational radiation exposure for all other individuals not covered by subsections (a), (b) or (c).

(C) Additional Criteria for the Healing Arts

1. Practices of the regulated entity shall be consistent with those recommended by the National Council for Radiation Protection and other guidance bodies as cited in Section 5-305(A).

2. Entrance Skin Exposure Criteria (ESEC) for non-specialty radiographic examinations shall not be exceeded when technical factors for an average adult patient (Standard person—defined below) are utilized.
   a. P.A. Chest: ESEC shall not exceed 30 milliroentgen per radiograph. Radiation exposure at the patient’s skin of 15 milliroentgen or less per radiograph is strongly recommended.
   b. Lateral Skull: ESEC shall not exceed 300 milliroentgen per radiograph. Radiation exposure at the patient’s skin of 200 milliroentgen or less per radiograph is strongly recommended.
(c) A.P. Abdomen: ESEC shall not exceed 750 milliroentgen per radiograph. Radiation exposure at the patient’s skin of 500 milliroentgen or less per radiograph is strongly recommended.

(d) A.P. Cervical Spine: ESEC shall not exceed 250 milliroentgen per radiograph. Radiation exposure at the patient’s skin of 175 milliroentgen or less per radiograph is strongly recommended.

(e) A.P. Thoracic Spine: ESEC shall not exceed 900 milliroentgen per radiograph. Radiation exposure at the patient’s skin of 600 milliroentgen or less per radiograph is strongly recommended.

(f) A.P. Lumbar Spine: ESEC shall not exceed 1000 milliroentgen per radiograph. Radiation exposure at the patient’s skin of 675 milliroentgen or less per radiograph is strongly recommended.

(g) A.P. Retrograde Pyelogram: ESEC shall not exceed 900 milliroentgen per radiograph. Radiation exposure at the patient’s skin of 600 milliroentgen or less per radiograph is strongly recommended.

(h) Dental (Bitewing or Periapical): ESEC shall not exceed 700 milliroentgen per radiograph. Radiation exposure at the patient’s skin of 350 milliroentgen or less per radiograph is strongly recommended.

(3) A standard person, for purposes of this regulation, is defined as an individual meeting the following anthropometric guidelines for the radiographic examination projection specified.
Body Part Thickness of Part Examination Description

Centimeters

Thorax 23 P.A. chest

Head 15 Lateral Skull

Abdomen 23 A.P. Abdomen

Neck 13 A.P. Cervical Spine

Thorax 23 A.P. Thoracic Spine

Abdomen 23 A.P. Lumbar Spine

Abdomen 23 A.P. Retrograde Pyelogram

(4) Actual patient skin doses may exceed those shown for the standard person or for correlated doses for persons of greater or lesser anthropometric measurements if the attending practitioner of the healing arts determines that clear and present medical/dental necessity requires such dosage increase. A written, signed statement by the practitioner explaining the need for increased patient dosage shall become a permanent part of the patient’s medical/dental record.

ADVISORY NOTE: The following Entrance Skin Exposure Criteria measurement protocol will be used by the State Health Department personnel to obtain data for regulatory purposes:

(a) A calibrated integrating radiation measuring device is placed in the center of the primary X-ray field at the location of entrance skin of a standard person for determination of exposure in air.

(b) Technical factors and other parameters such as field size and source-to-receptor distance are determined for a specific examination of a standard person.

(c) For photo-timed X-ray equipment, a phantom designed to
simulate attenuation of a standard person is placed between the radiation measuring device and the photo-time sensing element in a manner to minimize backscatter.

(d) The radiographic equipment is energized (without patient) and the radiation measuring device reading is recorded for compliance purposes.

40

(5) Specific area gonad shielding on patients during medical diagnostic X-ray procedures shall have a lead equivalent of at least 0.25 mm and shall be required when the following conditions exist:

(a) The gonads will lie within the primary X-ray field or within close proximity (5 centimeters) despite proper beam limitation.

ADVISORY NOTE: Specific area testicular shielding also should be used during examinations of the abdominal region in which the testes may lie close to the primary X-ray field.

Examples of such examinations include lumbar spine, intravenous pyelogram, and abdomen films.

(b) The clinical objectives of the examination will not be compromised.

ADVISORY NOTE: Each X-ray facility should compile a list of radiographic examinations for which gonad shielding is appropriate. Specific area ovarian shielding should be used during any examination of the abdominal region when such shielding will not obscure visualization of adjacent structures required by the examination. Specific area testicular shielding should be used for all examinations of male patients in which
the pubic symphysis will be visualized on the film and when such shielding will not obscure visualization of adjacent structures required by the examination.

(c) The patient has a reasonable reproductive potential.

(6) Special dose limiting requirements.

Protection of the embryo or fetus during radiological examination of women known to be pregnant shall be given special consideration.

ADVISORY NOTE: It is recommended that radiologic examinations of the abdomen and pelvis which do not contribute to the diagnosis of pregnant or potentially pregnant women in relation to their current illness be restricted to the first 10 days of the menstrual cycle in the case of potentially pregnant individuals and avoided entirely during known pregnancy. The attending practitioner of the healing arts retains full and complete discretion to carry out any radiographic examination considered medically necessary without regard for the phase of the menstrual cycle or fetal presence.

(D) Criteria Applicable to VYNPS Relating to Members of the Public

The maximum permissible total effective dose equivalent of members of the public in unrestricted areas from all regulated uses of ionizing radiation shall be kept as low as reasonably achievable (ALARA) and shall not exceed the values specified below:

(1) Discharges of radioactive materials and direct gamma radiation to unrestricted areas shall be controlled as follows:

(a) Gaseous Effluents

The annual committed effective dose equivalent limit for an
individual in an unrestricted area due to plant emissions of radioactive noble gases is 5 millirem. The committed effective dose equivalent from noble gases is calculated using noble gas concentrations in air samples obtained by the Department and as reported by VYNPS.

(b) Liquid Effluents
The annual committed effective dose equivalent limit for an individual in an unrestricted area, due to plant discharges of liquid effluents is 5 millirem. The committed effective dose equivalent from liquid effluents is calculated using liquid effluent concentrations in water samples obtained by the Department and as reported by VYNPS.

(c) Radioiodine
The annual committed effective dose equivalent limit of an individual in an unrestricted area due to plant emissions of radioiodine is 5 millirem. The committed effective dose equivalent from radioiodines is calculated using radioiodine concentrations in air samples obtained by the Department and as reported by VYNPS.

(d) Radioactive Particulates
The annual committed effective dose equivalent limit for an individual in an unrestricted area due to plant emissions of radioactive particulates is 5 millirem. The committed effective dose equivalent from radioactive particulates is calculated using radioactive particulate concentrations in air samples obtained by the Department and as reported by VYNPS.
(e) Direct Gamma Radiation

1) The annual effective dose equivalent limit for a member of the public in an unrestricted area due to plant emanations of direct gamma radiation is 5 millirem. For the purpose of this subsection, a measured exposure value of 20 milliroentgen per year above background radiation at any point on the site boundary bordered by land shall be considered equivalent to a 5 millirem effective dose equivalent for a member of the public in an unrestricted area.

2) If any site boundary, bordered by land, quarterly measured exposure value exceeds 10 milliroentgen above background radiation, VYNPS shall take the actions described in subsection (D)(3).

(2) Compliance with Dose Limits for Members of the Public

(a) VYNPS shall submit an annual report to the Department detailing the surveys and calculations of discharges of all radioactive materials and direct gamma radiation from all operations and activities at the plant and specifically addressing each of the applicable criteria specified in this rule. The annual report shall be due no later than May 15 for the prior calendar year.

(b) VYNPS shall submit monthly reports to the Department detailing the surveys and calculations of direct gamma radiation from all operations and activities at the plant and specifically addressing the quarterly and annual direct gamma radiation exposure limits specified in this rule. The monthly reports shall include copies of all records of all instruments used to monitor public exposure, including all records of calibration of the main steam line radiation monitors and all reports relevant to the off-site dose.
calculation manual issued or created during the report period. The monthly reports shall be due no later than the 15th of the month for the prior calendar month.

(c) For purposes of the annual and monthly reports, VYNPS shall calculate the committed effective dose equivalent of discharges of radioactive materials and shall report the measured exposure values of direct gamma radiation to unrestricted areas as provided in the most current VYNPS Off-Site Dose Calculation Manual as approved by the Nuclear Regulatory Commission, and shall report all measured exposure values from all other instruments used by VYNPS to monitor public exposure.

(d) VYNPS shall provide any other information requested by the Department relating to the information and underlying data and calculations in the annual and monthly reports.

(3) VYNPS shall take the following actions as soon as it becomes evident that the quarterly or annual committed effective dose equivalents or measured exposure values exceed, or may exceed, the limits specified in this rule, but in no event later than the last day of the calendar quarter in which the discharge exceeds these values:

(a) Immediately report the discharge or direct gamma radiation exceedance to the Department.

(b) Immediately make an investigation to identify the causes of the exceedance, or anticipated exceedance, of maximum limits for committed effective dose equivalent or measured exposure values, including an evaluation of all discharges of radioactive materials or direct gamma radiation that contributed to the exceedance, and
initiate a program designed to ensure that future discharges will be maintained at or below values not likely to cause exceedance of the maximum limits for committed effective dose equivalent or measured exposure values specified in this rule. As soon as possible, VYNPS shall report to the Department the action taken or proposed to be taken to achieve immediate reduction of the discharges for the Department’s approval; and

c) VYNPS shall implement the plan approved by the Department with all reasonable speed.

d) Within 14 days, but in no event later than 10 days after the end of the calendar quarter, submit a report to the Department detailing the actions described above and providing verification of the completion of the implementation of the plan approved by the Department.

(4) Independent Compliance Monitoring by the Department

The Department shall conduct environmental surveys and sampling and shall deploy appropriate instruments to measure discharges of radioactive materials and direct gamma radiation emanations from VYNPS. The Department shall use that information to determine compliance with the requirements established in this rule.

Section 5-306. Inspections.

(A) All regulated entities who receive, possess, use or transfer sources of ionizing radiation shall:

(1) Provide the Commissioner with copies of all reports furnished to the NRC related to radioactive effluent discharges and gamma radiation emanations under normal or abnormal operating conditions.

(2) Permit the Commissioner at all times the opportunity to inspect and
evaluate sources of radiation and the premises and facilities wherein such sources of radiation are used or stored, and shall make available pertinent data, as well as records and reports as may be required by the Department.

(3) Grant to the Commissioner access to all records pertaining to the radiological health and safety of employees, to discharges of radioactive material and gamma radiation emanations to the environment, and to any effect of the operation of the facility upon the environment.

(4) Provide the same notice to the Commissioner of any radiological incident and reports thereof and in the same manner as provided to the NRC.

(5) Permit the Commissioner to make unscheduled visits to the regulated facility for the purpose of obtaining samples and surveys for analysis.

(6) Upon request by the Commissioner, VYNPS shall furnish advance notification of each scheduled calibration of effluent monitors and shall permit the Commissioner to be present during such calibration.

(7) Upon request by the Commissioner, VYNPS shall share samples of environmental media for purposes of data correlation.

Section 5-307. Notice, Corrective Actions and Enforcement.

(A) Whenever the Department has reasonable grounds to believe that there has been a violation of any of the provisions of this rule, the Department shall take appropriate action as provided in this subsection or otherwise provided in law, in order to protect the public health and safety.

(B) If an inspection, including the Department’s independent compliance monitoring of VYNPS, indicates that the regulated entity is not in compliance with the
requirements of this rule, the Department shall notify the regulated entity in writing, with full particulars regarding any deficiencies.

(1) The notice shall include specific required corrective actions necessary for the regulated entity to take to regain compliance with this rule and may include interim corrective actions, such as requiring further investigation of the circumstances giving rise to the notice, or ceasing use of the source of radiation until such time as full compliance is restored, or such other action deemed necessary by the Department to protect the public health and safety is completed.

(2) A regulated entity shall respond to the Department within the time specified in the notice, which shall be determined by the risk associated with the alleged non-compliance.

(3) If the regulated entity fails to timely and satisfactorily comply with the requirements of the notice, the Department shall initiate an enforcement action.

(C) If the Department determines that an enforcement action is appropriate, or if timely and satisfactory compliance with a notice issued pursuant to subsection (B) of this subsection has not been achieved, the Department shall issue a notice of violation in writing. The notice shall specify the nature of the violation and required action to restore full compliance. If the Department determines that enforcement action is required, the Department shall:

(1) refer the matter to the Attorney General for injunction proceedings consistent with 18 V.S.A. §1656, or

(2) in the event of an emergency, take immediate action consistent with 18 V.S.A. §1655 (b), or

(3) initiate a proceeding before the Board by issuing a written notice of the
alleged violation to the regulated entity and filing the notice with the Board. The Board shall convene a contested case proceeding pursuant to 3 V.S.A. § 809 and 18 V.S.A. § 1655. On the basis of the evidence produced at the hearing the Board shall make findings of fact and conclusions of law and enter such order as in its opinion will best further the purposes of this rule and applicable law and shall give written notice of such order to the alleged violator, the Department and to any other parties to the proceeding, or

(4) take such other action in the discretion of the Commissioner as authorized by law.

(D) An appeal of any order issued by the Board pursuant to this subsection shall be to the superior court as provided in 18 V.S.A. § 1655(e).

Section 5-308. Registration.

(A) The owner or person having possession of any source of ionizing radiation except those exempted in Section 5-304, or licensed by the NRC, shall register each source with the Department within 30 days after the acquisition of such source. Registration shall be on forms provided by the Department.

(B) The registrant shall notify the Department within 30 days after any change in address or termination of use of any registered source of radiation.

(C) The owner or person having possession of any source of ionizing radiation not exempted in Section 5-304 (a) shall re-register such source every 3 years.

(D) No person, in any advertisement, shall refer to the fact that a source is registered with the Department and no person shall state or imply that any activity under such registration has been approved by the Department.

17
Section 5-309. Transportation.

(A) Persons transporting or shipping radioactive materials into, out of, through, or within the state shall provide notification to the Commissioner prior to such shipment or transport if such shipment or transport meets any of the following criteria:

(1) Any shipment or package containing a large quantity of radioactive material regulated by the NRC or US Department of Transportation (DOT).

(2) Fuel elements which have been utilized in a nuclear reactor.

(3) Any Fissile Class I, Class II, or Class III package regulated by the DOT.

(4) Any road, rail, air or sea transport of radioactive waste material for disposal.

(B) The shipper shall supply the following information in writing or by telephone to the Commissioner at least two working days prior to shipment. Schedule changes or additional information must be provided no later than two hours prior to shipment. To avoid undue hardship the Commissioner may approve other reporting schedules requested by the shipper.

(1) Name of shipper.

(2) Name of carrier.

(3) Type and quantity of radioactive material.

(4) Date and time of shipment.

(5) Starting point, scheduled route, and destination.

(6) Other information required by the Commissioner.

Shipments shall be made throughout the state with due regard to public health and safety.
The Commissioner may require changes in dates, routes or time of shipment if necessary to maximize protection to public health and safety. Where possible, the Commissioner shall coordinate such changes with his or her counterparts in adjoining political jurisdictions.