
STATE OF COLORADO

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Colorado Department
of Public Health
and Environment

To: Members of the State Board of Health

From: James Jarvis, Hazardous Materials and Waste Management Division
Steve Tarlton, Manager, Colorado Radiation Control Program

Through: Gary Baughman, Director, Hazardous Materials and Waste Management Division *J. Schieffelin for GB*

Date: May 8, 2014

Subject: Rulemaking Hearing on June 18, 2014 regarding Amendments to 6 CCR 1007-1,
Radiation Control, Part 2 of the State of Colorado *Rules and Regulations Pertaining to
Radiation Control*

The Department is proposing revisions to the following parts of the *Rules and Regulations Pertaining to Radiation Control*: Part 2, *Registration of Radiation Producing Machines, Facilities, and Services*.

The proposed changes are being initiated to provide further detail in the rule and to align the rule language with the processes used by the Radiation Program in administering its registration programs for radiation producing machines, facilities, and services. Other proposed changes are intended to make general improvements and correct errors and omissions in the regulatory part.

Further details on the proposed changes are listed in a Statement of Basis and Purpose and Specific Statutory Authority for the proposed revised rule, which, along with a Regulatory Analysis and supporting information, is available at: <http://www.colorado.gov/cdphe/radregs>.

The Radiation Program requests BOH approval to finalize the regulations at the rulemaking hearing on June 18, 2014.

A new requirement is being proposed which would require a service company to provide a copy of the service description to the end user facility within one business day. The remaining changes involve clarification and detail being added to the rule language, along with elimination of some provisions to ensure that the regulations reflect current practices of the Department. There are potentially a few controversial issues. These issues include the elimination of the CT Operator certification program; and the continued allowance of Certified Health Physicists to be permitted to perform shielding determinations at healing-arts facilities. However, the Division has proposed resolution to these issues within the rulemaking documents.

cc: Deborah Nelson, Administrator, State Board of Health

STATEMENT OF BASIS AND PURPOSE
AND SPECIFIC STATUTORY AUTHORITY
for Amendments to
6 CCR 1007-1, Radiation Control, Part 2,
Registration of Radiation Producing Machines, Facilities, and Services

Basis and Purpose.

The *Colorado Radiation Control Act*, Title 25, Article 11, *Colorado Revised Statutes* (the Act), Section 25-11-104, requires the State Board of Health (Board) to formulate, adopt and promulgate rules and regulations pertaining to radiation control.

Section 25-11-103 of the Act requires the Colorado Department of Public Health and Environment (Department) to develop and conduct programs for evaluation and control of hazards associated with the use of sources of ionizing radiation, including hazards from radiation producing machines and to register or issue registrations pertaining to use of such devices.

Section 25-11-104 of the Act requires Colorado's radiation regulations to be compatible with the *Suggested State Regulations for Control of Radiation* (SSRCR) of the Conference of Radiation Control Program Directors, Inc., except when the Board concludes, on the basis of detailed findings, that a substantial deviation from the SSRCR is warranted. The SSRCR Part B (last updated in 2009) is written very broadly such that individual states typically use and shape the suggested rule to fit their needs and program structure. Therefore, the proposed revisions to Part 2 are written to follow Colorado's specific registration process rather than all requirements of the SSRCR.

This amendment makes multiple changes to Part 2, *Registration of Radiation Producing Machines, Facilities, and Services* previously adopted June 16, 2010, which became effective July 30, 2010. The proposed changes to Part 2 are being initiated primarily to clarify and improve the understanding of the regulatory part, to remove provisions which may no longer apply, and to make minor corrections, improvements, and clarifications in the regulatory part. The proposed changes address the following topical areas:

- *The addition of definitions and references for clarity;*
- *The consolidation and relocation of sections throughout the rule based on topical considerations;*
- *The discontinuation of the (state) certification pathway mechanism for Computed Tomography machine operators and instead defer to nationally recognized certification bodies;*
- *Incorporation of language relating to disposal of radiation machines under service company activities;*
- *Reduction in the training requirements for portable hand held x-ray units;*
- *Clarification regarding ability to pursue compliance efforts against operators who falsify credentials or that are otherwise not properly qualified; and*
- *Correction of typographical and cross-reference errors throughout.*

Editorial comments, notes, and information shown in the right side margin of draft proposed regulations are for information only to aid the reader, and are not considered part of the regulation. These will be removed from the final regulation prior to submission to the Colorado Secretary of State's office for publishing in the Colorado register.

Specific Statutory Authority.

These rules are promulgated pursuant to the following statutory provisions: 25-1.5-101(1)(k), 25-1.5(1)(l), 25-11-103, 25-11-104, and 25-1-108, C.R.S.

The proposed changes to Part 2 are extensive and affect multiple sections throughout the rule and are not easily summarized here. Refer to the draft rule and side margin comments for further information and details.

SUPPLEMENTAL QUESTIONS

Is this rulemaking due to a change in state statute?

Yes, the bill number is ____; rules are __ authorized __ required.
 No

Is this rulemaking due to a federal statutory or regulatory change?

Yes
 No

Does this rule incorporate materials by reference?

Yes
 No

Does this rule create or modify fines or fees?

Yes
 No

** As a result of the change pertaining to Computed Tomography operators certification and described within the rulemaking documents, one fee will be eliminated at future date. This is expected to have a minimal impact on revenue.

REGULATORY ANALYSIS

for Amendments to
6 CCR 1007-1, Radiation Control, Part 2,
Registration of Radiation Producing Machines, Facilities, and Services

1. A description of the classes of persons who will be affected by the proposed rule, including classes that will bear the costs of the proposed rule and classes that will benefit from the proposed rule.

The classes of persons potentially affected by the proposed rule amendments are those entities registered to operate radiation producing machines, (including but not limited to x-ray machines, fluoroscopy machines, computed tomography systems, baggage screening systems), service radiation machines, certify radiation machines and perform certain radiation safety related activities. Entities who illegally operate radiation machines or service radiation machines without registering are also affected.

2. To the extent practicable, a description of the probable quantitative and qualitative impact of the proposed rule, economic or otherwise, upon affected classes of persons.

Quantitative:

As of January 2014, Colorado had approximately 5100 facilities registered to use radiation producing machines, 88 entities registered as Qualified Experts, 124 entities registered as Qualified Inspectors, 500 entities registered as Limited Scope Operators, 227 entities registered as Service Companies and 230 entities registered as Computed Tomography Operators.

Collectively, the proposed rule amendments are likely to have a minimal impact on registrants both quantitatively and qualitatively since these registered entities already follow the more detailed requirements through implementation of the X-Ray registration process. The vast majority of the changes to this rule were intended to clarify and provide further details pertaining to the registration process. Any added language or requirements do not significantly add to the regulatory burden.

The quantitative impacts on the provisions related to Computed Tomography Operators are that operators of computed tomography x-ray machines in the healing arts will be required to be registered by the American Registry of Radiologic Technologists in Computed Tomography rather than allow for a registration process through the Department. The Computed Tomography operators currently registered with the Department at approximately 55 facilities will be allowed to continue acting as CT operators.

The quantitative impacts on the provisions related to all operators of x-ray machines in all types of facilities are that the requirements will be directed at the operator as well as the facility using the x-ray machine. This will allow the Department to pursue compliance efforts against the operators who falsify their credentials or operate radiation machines without proper registration.

Qualitative:

The net qualitative effect of these changes is to keep Colorado rules consistent and clear with how the X-Ray Certification Unit (registration program) operates.

3. The probable costs to the agency and to any other agency of the implementation and enforcement of the proposed rule and any anticipated effect on state revenues.

There will be a very slight reduction in revenue to the X-Ray Certification program because the one-time \$50 registration fee for Computed Tomography Operators will no longer be realized.

4. A comparison of the probable costs and benefits of the proposed rule to the probable costs and benefits of inaction.

These changes are intended to reduce the extra time and effort needed to comply with the requirements by ensuring consistency between the processes used by the Division and those specified in the regulation.

5. A determination of whether there are less costly methods or less intrusive methods for achieving the purpose of the proposed rule.

There are no less costly methods or less intrusive methods for achieving the purpose of the proposed rule. The rule changes are necessary to provide the regulated community with sufficiently detailed information necessary to comply with the requirements. The primary purpose of the proposed changes is to align and ensure consistency with the practices used by the Division in implementing the x-ray registration regulatory program.

6. Alternative Rules or Alternatives to Rulemaking Considered and Why Rejected.

Alternative rules are not feasible as the proposed changes to this Part are intended to state the existing requirements in a way that will be easier to understand by the registrants (regulated community).

7. To the extent practicable, a quantification of the data used in the analysis; the analysis must take into account both short-term and long-term consequences.

The consequences of the changes will be that the facilities that use radiation machines, the operators of radiation machines, the companies that install and service radiation machines and the persons authorized to certify radiation machines will have an improved understanding of the regulatory requirements for registration.

The Radiation Advisory Committee (RAC) reviewed the changes to Part 2 prior to the public comment period and at the April 2, 2014 regular meeting. The RAC suggested changes to some credentialing requirements for certain Qualified Expert categories; requested that the inspection frequency for the various radiation machines be listed in a table to make it easier to identify the applicable frequency; and suggested considering an implementation (expiration) period for the registration process for Computed Tomography operators. These are discussed in further detail in the stakeholder comments section.

STAKEHOLDER Comment
for Amendments to
6 CCR 1007-1, Radiation Control, Part 2,
Registration of Radiation Producing Machines, Facilities, and Services

The following individuals and/or entities were included in the development of these proposed rules:

Notification of the opportunity to comment on the proposed changes to Part 2 was sent on March 19, 2014 to a total of approximately 442 email addresses/entities. These entities included:

- Approximately 110 Qualified Inspectors/Qualified Experts
- Approximately 171 Service Companies
- Approximately 50 Limited Scope Operators
- Approximately 111 "other stakeholders" (individuals who have signed up to receive notification of proposed radiation regulation changes) who represent a wide variety of interests, including: x-ray registrants, radioactive materials licensees; private citizens; private companies; professional organizations; and activist groups;
- The following 6 professional healing arts related organizations were notified via U.S. mail: Colorado Hospital Association; Colorado Radiological Society; Colorado Dental Association; Colorado Chiropractic Association; Colorado Veterinary Medical Association; and Rocky Mountain Oncology Society.

No Executive Order 5 (E05) entities (local government entities) expressed interest in participating in the rulemaking process for Part 2.

The following individuals and/or entities were notified that this rule-making was proposed for consideration by the Board of Health:

The notification of the opportunity to comment was sent to interested parties is identified above. The notification included a reference to the Radiation Program website where the draft rule was posted for review in addition to information on the tentative date for a request for rulemaking before Board of Health. A reference to the BOH website is also included with this information.

On or before the date of publication of the notice in the Colorado Register, the Division sent notice to persons and/or groups considered by the division to be interested parties to the proposed rule-making, and those who have requested notification/ information from the division regarding the proposed rule-making? X Yes No. The Division provided notice on May 16, 2014 .

Public notice of the June 18, 2014 rulemaking hearing for Part 2 was sent to stakeholders on May 16, 2014 to a total of approximately 442 email addresses/entities. These entities included:

- Approximately 110 Qualified Inspectors/Qualified Experts
- Approximately 171 Service Companies
- Approximately 50 Limited Scope Operators
- Approximately 111 "other stakeholders" (individuals who have signed up to receive notification of proposed radiation regulation changes) who represent a wide variety of interests, including: x-ray registrants, radioactive materials licensees; private citizens; private companies; professional organizations; and activist groups;
- Six healing arts profession related organizations were also notified via U.S. mail: Colorado Hospital Association; Colorado Radiological Society; Colorado Dental Association; Colorado Chiropractic Association; Colorado Veterinary Medical Association; and Rocky Mountain Oncology Society.

No Executive Order 5 (E05) entities (local government entities) expressed interest in participating in the rulemaking process for Part 2.

Summarize Major Factual and Policy Issues Encountered and the Stakeholder Feedback Received. If there is a lack of consensus regarding the proposed rule, please also identify the Department's efforts to address stakeholder feedback or why the Department was unable to accommodate the request.

The major factual/policy issues encountered during review by the Radiation Advisory Committee just prior to the public comment period included:

1. A concern was expressed over the elimination of the Table 2-1, which summarizes the inspection frequencies for certain types of radiation producing machines and or the facilities or applications.

Background information: The requirements contained within the Table were believed to be adequately addressed in the text of the rule. Upon further consideration, the Division recognizes that a tabular format may provide a useful summary of the requirements.

Proposed resolution: Table 2-1 will be reinstated with the necessary updates and added provisions and information contained in the associated text section.

2. A concern was expressed over the elimination of the provision/qualifications section of Appendix 2E which currently allows certain individuals (presently registered as radiologic technologists by the American Registry of Radiologic Technologists) to become recognized as Computed Tomography (CT) operators by the Radiation Program without having undergone a more formal training qualification program such that they could become certified as CT operators by ARRT. The concern was that any individual in the process of being trained would not be able to complete their training to become recognized by the state.

Background information: Since approximately 2005, Part 2 of the regulations has provided a method for individuals wishing to be operators of CT devices but were not certified by a national certification body (e.g., the American Registry of Radiologic Technologists) as a CT operator. In the 2005 revision of Part 2, an "alternate pathway" mechanism was implemented (Appendix 2E) to allow individuals who were registered as radiologic technologists by ARRT, but were unable to attend a formal training program for the CT subspecialty to be users of such devices. This was particularly important for rural medical facilities who, at the time, may have had difficulty in attracting CT certified individuals.

Although intended to provide a degree of confidence in the level of training for such alternate pathway CT operators, the Division believes that the requirements of Appendix 2E does not provide an equivalent level of training to that required by ARRT to obtain the CT subspecialty certification. Colorado's requirements generally specify training equivalent to that of ARRT, but they do not provide for an examination or testing process, or expiration and recertification process as does a nationally recognized certification body. Colorado's certification process is also not recognized outside of Colorado, and in some instances, the

certification limits the individual to performing only certain CT procedures (unlike a national certification which allows all types of CT imaging procedures).

Proposed resolution: The approach to resolution of this concern will be to reinstate Appendix 2E for an established, but limited time period (potentially 1 year after the effective date of the rule), after which time the alternate pathway would not be allowed for new individuals. Instead, individuals would have to obtain certification through a nationally recognized certification body as a CT operator. The Division would also initiate outreach efforts to those registrants (hospitals, medical imaging centers, etc.) having such CT systems making them aware of the expiration of the provision. This approach will conceivably permit any individuals who are in the midst of their training to complete such training and become recognized by the state. Those who have become recognized under this alternate pathway in the past would effectively be grandfathered and continue to be allowed to function as CT operators.

3. Under the revised language of Appendix 2B and 2C, a concern was raised over the elimination of individuals having qualifications as a Certified Health Physicist (CHP) by the American Board of Health Physics from being allowed to perform shielding analysis calculations for healing-arts facilities, due to changes and consolidation of training requirements for Qualified Experts.

Background information: Currently (and as defined in Appendix 2B and 2C of Part 2) there are three categories of individuals known as Qualified Experts (QEs) who may be registered with the state to perform certain radiation safety and medical related functions applicable to medical and non-medical facilities. The requirements for such individuals varies and historically has depended upon the types of facilities the activities were being performed at, but tended to be divided between healing-arts and non healing-arts facilities.

Proposed resolution: The removal of recognizing CHPs as a qualification for performing shielding calculations occurred in error during the editing process. The language of the proposed rule will be modified to allow entities possessing certification as a CHP to perform shielding calculations at both industrial (non-healing arts) and medical (healing arts) facilities.

Several registrants and other entities provided comments during the stakeholder comment period. The more significant issues, comments, and responses are summarized below.

1. A dental professional organization requested there be additional clarification regarding qualifications for dentists serving as radiation safety officers at dental facilities, that additional clarification be made regarding inspection requirements for dental computed tomography (CT) machines.

The Radiation Program has addressed these comments following the April BOH rulemaking request. The Radiation Program has added definitions and clarifying language, consistent with that found in other regulatory parts, to address the comments.

2. One medical facility registrant suggested that certain health care providers such as Nurse Practitioners, Physician Assistants, and Registered Cardiovascular Invasive Specialists be specifically authorized in the regulations to operate fluoroscopy devices. The regulations currently require that due to the potential for high radiation doses to patients, that operation of such fluoroscopy devices be performed by a physician or other non-physician practitioners with demonstrated advanced training in radiation safety and use of such systems. On a case by case basis, a limited number of non-physician individuals have been approved for such use.

The Radiation Program believes the blanket authorization of these healthcare professionals requires further evaluation, is complex, and is beyond the scope of the current rulemaking process. Such a change would require significant effort and outreach to additional stakeholder groups not fully identified. The Radiation Program has contacted the commenter and has proposed to reach out to these additional professionals to seek solutions to address the issue in a future rulemaking.

3. A service company registrant/manufacturer representative has requested that certain qualification language in Part 2 be modified to allow (medically) licensed dermatologists to use certain superficial radiation therapy devices for treatment of patients.

There is currently nothing in the regulations that would explicitly prevent a dermatologist from being registered to use a therapy radiation system, provided they meet the requirements for a therapy authorized user of in Part 2, Appendix 2K. However, it is understood that most dermatologists would not typically be able to meet the regulatory requirements for such use. The training and qualification data for dermatologists as provided by the commenter does not appear to be adequate to meet the minimal qualifications for therapy uses.

The Radiation Program believes that permitting dermatologists to use such therapy devices without further discussion and evaluation may not be in the interest of public safety. The addition of these healthcare professionals is a complex issue that is beyond the scope of the current rulemaking process and requires additional effort and outreach to a wider group of stakeholder. The Radiation Program has contacted the commenter and has proposed to reach out to this stakeholder group to seek solutions to address this specific issue in a future rulemaking.

Please identify health equity and environmental justice (HEEJ) impacts. Does this proposal impact Coloradoans equally or equitably? Does this proposal provide an opportunity to advance HEEJ? Are there other factors that influenced these rules?

The Division believes there are no impacts on health equity and environmental justice (HEEJ). The proposed changes impact Coloradoans equally and equitably, consistent with the registration practices of the X-Ray Certification Unit.

The proposed changes are believed to be neutral with respect to advancing HEEJ.

The other factors which influenced the proposed rules are the need to maintain Colorado regulations consistent with how the Division conducts its program.

DRAFT 2 05/13/2014**1 DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT****2 Hazardous Materials and Waste Management Division****3 STATE BOARD OF HEALTH****4 RADIATION CONTROL - REGISTRATION OF RADIATION MACHINES, FACILITIES AND SERVICES****5 6 CCR 1007-1 Part 02**

6 *[Editor's Notes follow the text of the rules at the end of this CCR Document.]*

7 PART 2: REGISTRATION OF RADIATION MACHINES, FACILITIES AND SERVICES**8 2.1 Purpose and Scope.****9 2.1.1 Authority**

10 2.1.1.1 Rules and regulations set forth herein are adopted pursuant to the provisions of sections
11 25 1 108, 25 1.5 101(1)(l), and 25-11-104, CRS.

12 2.1.2 Basis and Purpose.

13 2.1.2.1 A statement of basis and purpose of these regulations accompanies this part and
14 changes to this part. A copy may be obtained from the Department.

15 2.1.3 Scope.

16 2.1.3.1 This part provides for:

- 17 (1) Registration of facilities;
- 18 (2) Certification of radiation machines;
- 19 (3) Registration of persons providing radiation machine services including assembly,
20 installation, maintenance and repair;
- 21 (4) Registration of qualified inspectors and qualified experts; and
- 22 (5) Approval of **radiation safety officers**, mammographers and other operators.

23 2.1.4 Applicability.

24 2.1.4.1 The requirements and provisions of this part apply to **each person who uses, operates,**
25 **services or certifies radiation machines and to** each registrant or applicant for
26 registration subject to this part unless specifically exempted.

27 2.1.4.2 The provisions of this part are in addition to (and not in substitution for) other applicable
28 provisions in Parts 1, 4, 5, 6, 7, 8, 9, 10, 24 and other parts of these regulations.

29 2.1.5 Published Material Incorporated by Reference.

30 2.1.5.1 Published material incorporated in Part 2 by reference is available in accord with 1.4.

31 2.2 Definitions.

32 2.2.1 Definitions of general applicability to these regulations are in Part 1, section 1.2.

33 2.2.2 As used in Part 2, each term below has the definition set forth.

Comment [JJ1]: EDITORIAL NOTE 1: ALL COMMENTS (SUCH AS THIS ONE) SHOWN IN THE RIGHT SIDE MARGIN OF THIS DRAFT RULE ARE FOR INFORMATION PURPOSES ONLY TO PROVIDE ADDITIONAL INFORMATION AND TO AID THE READER IN UNDERSTANDING THE PROPOSED CHANGE DURING THE DRAFT REVIEW PROCESS.

THESE COMMENTS ARE **NOT** PART OF THE RULE AND ALL COMMENTS WILL BE DELETED PRIOR TO FINAL SUBMISSION TO THE COLORADO SECRETARY OF STATE'S OFFICE FOR FINAL PUBLISHING IN THE COLORADO CODE OF REGULATIONS.

EDITORIAL NOTE 2: ANY REFERENCE TO THE ACRONYM "CRCPD" IN THE SIDE MARGIN NOTES REFERS TO THE CONFERENCE OF RADIATION CONTROL PROGRAM DIRECTORS (CRCPD), INC., WHICH DEVELOPS SUGGESTED STATE REGULATIONS FOR CONTROL OF RADIATION (SSRCR). UNLESS OTHERWISE DETERMINED BY THE BOARD OF HEALTH, COLORADO'S RULES ARE TO BE CONSISTENT WITH THE SSRCR REGULATIONS. THE SSRCRS MAY BE FOUND ONLINE AT:
<http://www.crcpd.org/ssrcrs/default.aspx>

THE EQUIVALENT SSRCR TO PART 2 IS SSRCR PART "B". PART B IS WRITTEN TO BE VERY GENERAL AND MOST STATES MUST MODIFY THIS PART EXTENSIVELY TO FIT THEIR PARTICULAR PROGRAMMATIC NEEDS. PART 2 FOLLOWS ELEMENTS OF SSRCR PART B IN A BROAD, GENERAL MANNER.

Comment [JJ2]: Language added at the recommendation of the State Attorney General's Office.

DRAFT 2 05/13/2014

34 “ARRT” means the American Registry of Radiologic Technologists.

35 “ARRT(R)” . See “radiologic technologist” .

36 “ASRT” means the American Society of Radiologic Technologists.

37 “Assembler” means any person engaged in the business of assembling, replacing, or installing
38 one or more components into a radiation machine system or subsystem.

39 “Calibration” means to adjust and/or determine the:

40 (1) Response or reading of an instrument relative to a series of conventionally true
41 values; or

42 (2) Strength of a radiation source relative to a standard or conventionally true value.

43 “Certification Evaluation” (CE) means the evaluation of a radiation machine at a facility by a
44 qualified inspector or the Department for the purpose of ascertaining the performance of the
45 radiation machine system and/or facility in order to determine conformance with these
46 regulations.

47 **“Computed tomography” (CT) means the production of a tomogram by the acquisition and**
48 **computer processing of x-ray transmission data. For the purposes of Part 2, the**
49 **requirements stated for computed tomography machines do not apply to “Volumetric**
50 **Dental Imaging Systems”.**

51 “Direct supervision” means the supervisor is present in the facility and immediately available to
52 furnish assistance and direction to the supervisee throughout the performance of a procedure.

53 (1) The direct supervisor is not required to be present in the room when the procedure is
54 performed.

55 (2) Direct supervision during the performance of a mammography examination means
56 that the supervisor is present to observe and correct, as needed, the
57 performance of the individual being supervised who is performing the
58 examination.

59 **“Dual-energy X-Ray Absorptiometry” (DXA, previously DEXA) means an imaging**
60 **technique using radiation machines for quantifying bone density, used in the diagnosis**
61 **and management of osteoporosis.**

62 “Examination” means performing a procedure, including selection of exposure settings,
63 positioning the x-ray system and the patient, and initiating and terminating the exposure.

64 “Facility” means, for purposes of Part 2, the location within one building (or vehicle, or under one
65 roof, or at one address) and under the same administrative control, at which a radiation machine
66 is or was installed, operated and/or located.

67 “FDA” means the United States Food and Drug Administration.

68 **“Fluoroscopy” means a technique for generating x-ray images and presenting them**
69 **simultaneously and continuously as visible images.**

70 **“Industrial Radiography” means an examination of the structure of materials by the**
71 **nondestructive method of utilizing ionizing radiation to make radiographic images.**

72 “Inter-comparison” means the direct comparison, in accord with 2.4.4.45, of two instruments
73 designed to measure the same physical quantity.

Comment [BNV3]: Definition added for clarity,
based on stakeholder requested changes.

Definition is equivalent to that found in Part 6 of the
regulations.

Comment [BNV4]: Definition added for clarity.

Comment [JJ5]: Definition added for clarity.
Definition is consistent with that found in Part 6.

Comment [JJ6]: Definition added for clarity.
Definition is consistent with the definition contained
in Part 5 (Industrial Radiographic Operations) of the
regulations.

DRAFT 2 05/13/2014

74 "Limited-scope operator" (LSO) means an individual who has taken and passed a required test
 75 and has approval by the Department pursuant to ~~2.6.12.4.5.1~~ to operate x-ray systems and to
 76 conduct specified radiographic examinations of the chest, extremities, skull, hip/pelvis and
 77 spine/sacrum.

78 ~~"LSO" means limited-scope x-ray machine operator, abbreviated by the ASRT as LXMO, limited~~
 79 ~~x-ray machine operator.~~

Comment [JJ7]: Definition consolidated into prior definition.

80 "MQSA" means Mammography Quality Standards Act.

81 "NIST" means the National Institute of Standards and Technology.

82 "Operator" means an individual adequately trained in accordance with these regulations in the
 83 purpose and experienced in the practice of performing a radiographic examination.

84 "Performance adjustment" means the adjustment or repair of a function (not including the setting
 85 of operator-selectable functions, such as time, mA and/or kVp for an individual exposure) of an x
 86 ray machine or imaging system that is required to bring the machine into compliance with these
 87 regulations and the specifications.

88 **"Provisional Mammographer" means an individual who meets the requirements of 2M.2**
 89 **and has current department approval to perform mammograms under direct supervision in**
 90 **order to meet the requirements to become a Qualified Mammographer.**

Comment [JJ8]: This is a new definition added for clarity.

91 "Provisional qualified inspector" (PQI) means an individual who meets the applicable
 92 requirements of **Section 21.5 of** Appendix 2I and has current Department approval in a
 93 designated specialty to perform, ~~under the general supervision of a qualified inspector,~~
 94 evaluations of radiation machines, facilities, and operators for compliance with these regulations
 95 **while under the supervision of a qualified inspector.**

Comment [JJ9]: Changes added for clarity and understanding.

96 "QE(R)" means a qualified expert medical physicist ~~designated for radiographic~~
 97 ~~imaging~~ **approved to design or evaluate shielding for radiation machines used in the**
 98 **healing arts.**

99 "QE(S)" means a qualified expert physicist ~~designated in other than the healing arts~~ **approved to**
 100 **design or evaluate shielding for radiation machines used for non-healing arts purposes.**

101 "QE(T)" means a qualified expert medical physicist ~~designated for radiation therapy~~ **approved to**
 102 **design or evaluate shielding for radiation machines used in radiation therapy.**

103 "Qualified expert" (QE) means an individual who ~~as provided in 2.4.3~~ meets the applicable
 104 requirements of Appendix 2B or 2C and has current Department approval ~~in a designated~~
 105 ~~specialty~~ **as QE(S), QE(R), or QE(T)** to evaluate radiation shielding design and recommend
 106 radiation safety practices, **as provided in 2.4.3.**

107 "Qualified inspector" (QI) means an individual who ~~as provided in 2.4.4~~ meets the applicable
 108 requirements of Appendix 2I and has current Department approval in a designated specialty to
 109 perform evaluations of radiation machines, facilities, ~~service providers~~ and operators for
 110 compliance with these regulations, **as provided in 2.4.4.**

111 "Qualified mammographer" means a mammographer who ~~as provided in 2.4.5.4~~ meets the
 112 applicable requirements of Appendix 2M ~~and has current Department approval.~~

Comment [BNV10]: The original reference to 2.4.5.4 refers to registration of a provisional Mammographer.

113 "Qualified trainer" (QT) means an individual whose training and experience adequately prepares
 114 the individual to carry out specified training assignments as illustrated in Appendix 2J.

The department does not have a registration process for qualified mammographers.

115 "Radiologic technologist" means an individual who is currently registered in radiologic technology
 116 with the American Registry of Radiologic Technologists, designated ARRT(R).

DRAFT 2 05/13/2014

117 “Registered medical physicist” (RMP) means an individual who meets the applicable
 118 requirements of Appendix 2IB and has current Department approval to perform medical physics
 119 activities ~~in a designated specialty~~, including ~~to-shielding design-shielding, measure ionizing~~
 120 ~~radiation~~ **performing radiation surveys**, and ~~oversee~~ **providing consultation for** radiation
 121 protection, **and** quality assurance and clinical medical physics for radiation therapy, computed
 122 tomography, mammography and/or other healing arts facilities.

123 “Service company” means a person who is engaged (or offers to engage) in the business of
 124 selling, leasing, transferring, lending, assembling, installing, maintaining, repairing, storing,
 125 trading out, **disabling**, or disposing of radiation machines and their related components, or is
 126 engaged in the business of furnishing or offering to furnish radiation machine servicing or
 127 services.

128 Service technician” means an individual who is employed by a service company to perform
 129 radiation machine servicing or services.

130 “Shielding design” means physical specifications, such as room layout, floor plan, construction
 131 materials, and equipment configuration, to demonstrate compliance with the radiation limits set
 132 forth in Part 4 of these regulations.

133 **“Volumetric dental imaging system” means an x-ray machine that produces, for oral and**
 134 **maxillofacial structures, a three-dimensional tomographic data set or a time sequence of**
 135 **three-dimensional tomographic data sets. A dental x-ray machine only capable of**
 136 **producing a two-dimensional image is not considered to be a volumetric dental imaging**
 137 **system. For the purposes of Part 2, the requirements stated for “computed tomography”**
 138 **machines do not apply to “Volumetric Dental Imaging Systems”.**

Comment [BNV11]: Definition added for clarity based on stakeholder request.

Definition is consistent with the definition found in Part 6.

139 EXEMPTIONS FROM THE REGULATORY REQUIREMENTS**140 2.3 Exemptions.**

141 2.3.1 Electronic equipment that is not designed primarily to produce radiation is exempt from the
 142 registration and notification requirements of Part 2, provided that the dose equivalent rate
 143 averaged over an area of 10 cm² does not exceed 5 µSv (0.5 mrem) –per hour at 5 cm from any
 144 accessible surface of such equipment.

145 2.3.2 Radiation machines while in transit or storage incident thereto are exempt from the requirements of
 146 Part 2.

147 2.3.3 Domestic television receivers, computer monitors, and similar devices are exempt from the
 148 requirements of Part 2.

149 2.3.4 A radiation machine that is out of service yet kept at a facility is exempt from the registration and
 150 certification evaluation requirements of Part 2 **if provided:**

151 ~~2.3.4.1 the Department has received documentation, on Form R 61, “Disposition of a Radiation~~
 152 ~~Machine”, signed by a service technician, or equivalent signed form, that~~ the radiation machine
 153 has been made physically inoperable by inactivating or dismantling the electrical circuitry such
 154 that the radiation machine is not capable of producing radiation, **and**

155 **2.3.4.2 the Department has received documentation of 2.3.4.1 on Form R 61, “Disposition**
 156 **of a Radiation Machine”, or equivalent form, that is signed by a registered service**
 157 **technician.;**

158 2.3.5 An electron microscope or electron microprobe is exempt from Part 2 provided that:

159 2.3.5.1 A survey shows compliance with 2.3.1; or

160 2.3.5.2 The device is not capable of exceeding an operating voltage of 50,000 electron volts.

DRAFT 2 05/13/2014

161 2.3.6 The legal owner of electronic equipment which meets the requirements of 2.3.1 but which is not
 162 specifically exempted under 2.3.2, 2.3.3, and 2.3.4 shall maintain for the lifetime of the equipment
 163 radiation measurement results or certification from the manufacturer or a qualified expert
 164 indicating that the equipment complies with the exposure rates specified in 2.3.1.

165 REQUIREMENTS FOR DEPARTMENT APPROVAL AND/OR REGISTRATION

166 2.4 State of Colorado Authorization or Approval Recognized by the Department is Required for
 167 Each Category Designated in This Section.

168 2.4.1 Registration of a Facility.

169 2.4.1.1 Each person possessing or in the process of coming into the possession of a radiation
 170 machine facility shall:

171 (1) Be registered with the Department **prior to using a radiation producing machine**
 172 **at the facility;**

173 ~~(2) Apply for registration of such facility with the Department prior to using a radiation~~
 174 ~~producing machine at the facility;~~

175 ~~(3)~~ Complete and submit an application for registration on **the applicable** Department
 176 **R-4 series** Form ~~R-4~~, and include all of the information required by the form and
 177 any accompanying instructions, ~~together with the required fee(s).~~ **The facility**
 178 **shall;**

Comment [JJ12]: The department does not collect fees for registration. Fees for machine registration are obtained through sales of machine certification labels.

179 (a) Designate a radiation safety officer who meets the applicable requirements of
 180 Appendix 2A to be responsible for overall radiation protection for the
 181 facility; **and**

182 ~~(b) Attest that a policy is in place for keeping up to date a written or electronic~~
 183 ~~list of all operators who have demonstrated adequate radiation safety~~
 184 ~~training and experience, as prescribed by 2.6.1 and the applicable~~
 185 ~~appendices of parts of these regulations; and~~

Comment [JJ13]: The requirements of this provision are addressed in later sections.

186 ~~(cb)~~ **Attest Document** that a written shielding design, ~~if required~~, has been:

187 (i) Completed, ~~or will have been completed~~, in accordance with ~~6.3.2~~
 188 ~~and Appendices 6A, 6B and 6C~~ **Parts 6, 8, or 9** of these
 189 regulations, **as applicable**, prior to any radiation machine
 190 installation; and

191 (ii) ~~Placed and R~~etained on file at the facility for the life of the facility.

192 2.4.1.2 As prescribed by 6.3.3.3 for a healing arts screening program, **registrants shall**
 193 complete and submit ~~Form R-300, "Application for Registration – Healing Arts Screening"~~
 194 **a Healing Arts Screening application** including all of the information required by **Part**
 195 **6**, Appendix 6F ~~and/or Form R-300 and any accompanying instructions, together with the~~
 196 ~~required fee(s).~~

197 2.4.1.3 In addition to the other requirements of 2.4, any research using radiation machines on
 198 humans shall be approved by an Institutional Review Board (IRB).

199 ~~2.4.1.4 If radioactive materials are also present at the facility, the requirements of Part 2 apply as~~
 200 ~~appropriate to coordination with the equivalent licensee or application for a license.~~

Comment [JJ14]: As originally written, this provision is unclear and is redundant with the requirements contained in other regulatory Parts and is therefore deleted here.

201 2.4.2 Registration as a Service Company.

202 2.4.2.1 Each person who is engaged (or offers to engage) in the business of selling, leasing,
 203 transferring, lending, assembling, installing, maintaining, repairing, storing, trading out,

DRAFT 2 05/13/2014

204 **disabling** or disposing of radiation machines and their related components, or is
 205 engaged in the business of furnishing or offering to furnish radiation machine servicing or
 206 services in this State, shall be registered with the Department prior to ~~furnishing or~~
 207 ~~offering to furnish any such service.~~**performing such activities.**

208 2.4.2.2 **Each Service Company shall complete the Form R-60 series** Application for
 209 registration ~~shall be completed on Form R-60, "Application for Registration – Radiation~~
 210 ~~Machine Servicing and Services," and shall contain~~**with** all of the information required by
 211 the Department ~~as~~ indicated on the form and all accompanying instructions, together with
 212 the ~~required fee(s)~~ **required by Part 12, Category 22.**

213 2.4.2.3 Each person applying for registration under 2.4.2 shall identify and provide:

214 (1) The ~~specific services~~**service category** for which registration is being requested,
 215 including but not limited to:

216 (a) ~~Engaging (or offering to engage) in s~~Selling, leasing, transferring, lending,
 217 assembling, installing, maintaining, ~~repairing~~, trading out, **disabling** or
 218 disposing of radiation machines and associated radiation machine
 219 components; and

220 (b) Servicing of radiation machines and associated radiation machine
 221 components, **to include preventative maintenance, performance**
 222 **adjustment, calibration, or repair.**~~;~~~~and~~

223 ~~(c) Performance adjustment to or calibration of radiation machines,~~
 224 ~~measurement instruments, and devices;~~ ~~and~~

Comment [JJ15]: This provision is incorporated into 2.4.2.3(1)(b).

225 (2) The name and qualifications of each service technician who will provide service,
 226 including:

227 (a) Documentation of the training and experience that demonstrate ~~, as required~~
 228 ~~by compliance with the requirements of~~ Appendix 2H, ~~sufficient~~
 229 ~~competence to provide the services for which registration is being~~
 230 ~~requested;~~ and

231 (b) Certification that each service technician has been instructed in, **and**
 232 **demonstrates an understanding of** the requirements of:

233 **(i)** these regulations; ~~and of~~

234 **(ii)** the Federal Performance Standard (21 CFR Chapter I, Subchapter J,
 235 April 1, 2010); ~~and demonstrated an understanding thereof;~~ and

236 (3) ~~The Documentation of the~~ type of personnel dosimetric monitoring ~~supplied~~**used**,
 237 ~~frequency of reading, and replacement or exchange schedule as appropriate~~
 238 ~~(see that meets the requirements of 4.17 and 4.18);~~ and

239 (4) ~~The type~~**A list** of measurement instruments that will be used to **ensure that**
 240 **machine performance** ~~determine compliance with~~ **meets the manufacturer's**
 241 **specifications** ~~these regulations, including:~~

242 ~~(a) The frequency of calibration; and~~

243 ~~(b) The provider of calibration services; and~~

244 ~~(c) A written commitment to meet the instrument calibration requirements specified in~~
 245 ~~2.4.4.4.~~

DRAFT 2 05/13/2014

246 (5) Each servicing and services registrant under 2.4.2 shall notify the Department
247 each time the registrant adds or deletes any service technician(s) to the list
248 of service technicians authorized to provide radiation machine service(s).

249 (a) The registrant will be assessed an acceptance review fee when adding
250 a technician, unless the technicians are added during a registration
251 renewal.

252 2.4.3 Registration as a Qualified Expert.

253 2.4.3.1 Each individual who offers the service of designing and/or evaluating designs or
254 evaluates protective shielding around a radiation area so the area meets to meet the
255 public exposure requirements of 6.3.2 Part 4, shall be registered with the Department as
256 a qualified expert designated QE(R), QE(S) and/or QE(T).

Comment [BNV16]: QE's work with healing arts and non-healing arts facilities. Section 6.3.2 of Part 6 requires a Healing Arts facility to meet the public exposure limits of part 4. Changing this to "Part 4" allows this section to apply to all facilities.

257 (1) For a healing arts facility, each shielding design shall be completed as specified in
258 Part 6 by a registered medical physicist who:

259 (a) Meets the criteria established in Appendix 2B; and

260 (b) Has a current Department "Notice of Registration" as a QE(R) for radiography and/or
261 QE(T) for radiation therapy. Each individual who designs or evaluates
262 shielding for a radiation machine regulated by Parts 8 or 9 and not used in
263 the healing arts shall be registered with the department as a QE(S) and
264 meet the requirements of Appendix 2C.

Comment [JJ17]: This provision clarifies the existing requirements and aligns the regulatory part with current practice of the department.

265 (2) Each individual who designs or evaluates shielding for a radiation machine
266 used in the healing arts as regulated by Part 6, but not used in radiation
267 therapy, shall be registered with the department as a QE(R) and meet the
268 requirements of Appendix 2B. For other than a healing arts facility, each
269 shielding design shall be completed by a qualified expert who:

Comment [JJ18]: This provision clarifies the existing requirements and aligns the regulatory part with current practice of the department.

270 (a) Meets the criteria established in either Appendix 2B for a registered medical physicist
271 or Appendix 2C for any other physicist, designated QE(S); and

272 (b) Has a current Department "Notice of Registration" as QE(R), QE(S) and/or QE(T).

273 (3) Each individual who designs or evaluates shielding for a radiation machine
274 used in radiation therapy as regulated by Part 24, shall be registered as a
275 QE(T) and meet the requirements of Appendix 2B.

Comment [JJ19]: This provision clarifies the existing requirements and aligns the regulatory part with current practice of the department.

276 2.4.3.2 Each individual who offers the service of calibration and compliance surveys for a
277 radiation therapy unit shall be registered with the Department as a registered medical
278 physicist who meets the criteria in Appendix 2B and has current Department approval as
279 a registered qualified expert for radiation therapy, designated QE(T).

Comment [BNV20]: This provision is relocated to Section 2.4.4 as it applies to a Registered Medical Physicist (RMP), which is a QI category, not a QE category as addressed in this section.

280 2.4.3.23 Each Qualified Expert shall complete the applicable Form R-68 series
281 application for registration shall be submitted on Form R-68, "Application for Registration
282 Qualified Expert," and include all of the information required by the form and any
283 accompanying instructions, together with the required fee(s) required by Part 12,
284 Category 22.

285 2.4.4 Registration as a Qualified Inspector.

286 2.4.4.1 Each individual who offers the service of performing a performs a certification evaluation
287 of a radiation machine and/or an evaluation of a facility evaluation shall be registered
288 with the Department as a qualified inspector who meets the criteria established in
289 Appendix 21.

DRAFT 2 05/13/2014

290 **2.4.4.2 Each individual who performs a certification evaluation on mammography,**
 291 **fluoroscopy or computed tomography machines used in the healing arts or,**
 292 **evaluates the quality assurance programs of digital imaging systems used in the**
 293 **healing arts shall be registered with the department as a qualified inspector with**
 294 **approval in the Registered Medical Physicist category.**

295 **(1) Individuals who perform a certification evaluation on Volumetric Dental Imaging**
 296 **Systems shall be registered with the department as a qualified inspector with**
 297 **approval in "Volumetric Dental Imaging Systems".**

Comment [BNV21]: Clarification added based on stakeholder comment.

298 **2.4.4.3 Each individual who performs registered medical physicist duties required by Part**
 299 **24 shall be registered with the department as a qualified inspector with approval in**
 300 **the radiation therapy Registered Medical Physicist category.**

301 ~~2.4.4.2~~ **2.4.4.4 The application for registration shall be submitted on Form R-53, "Application for**
 302 **Registration—Qualified Inspector," Each Qualified Inspector shall complete the**
 303 **applicable Form R-53 series application for registration and include all of the**
 304 **information required by the form and any accompanying instructions, together with the**
 305 **required fee(s) required by Part 12.**

306 ~~2.4.4.3~~ **Department approval as a registered medical physicist consistent with Appendix 2B is**
 307 **considered also to be Department approval as a qualified inspector for any facility and/or**
 308 **machine.**

309 ~~2.4.4.4~~ **2.4.4.5 Certification evaluation M**measurements shall be made with instruments that
 310 are sufficiently sensitive to determine compliance with these regulations.

311 (1) The instruments shall be maintained and used in good working order.
 312 (2) ~~Notwithstanding the requirement of 4.17.2, such equipment~~ **The instruments** shall be
 313 calibrated **at least** every two (2) years, or in accordance with the manufacturer's
 314 recommendation, whichever is more frequent, or after any repair that could affect
 315 the calibration **of the instrument.**

316 (3) Calibrations shall be NIST-traceable where such traceability is feasible.

317 (4) ~~In lieu of calibration, instrument accuracy may, with Department approval, be~~
 318 ~~determined by (inter)comparison with a suitable and appropriately calibrated~~
 319 ~~instrument~~ **Procedures for instrument calibration done by inter-comparison**
 320 **with a suitable and appropriately calibrated instrument must be approved**
 321 **by the department.**

322 ~~(5) Each (inter)comparison protocol shall be submitted to the Department for review and~~
 323 ~~approval.~~

324 (a) The comparison shall be between an instrument that has a current calibration
 325 traceable to NIST and an instrument for which a calibration factor is to be
 326 determined.

327 (b) The comparison shall be made using the actual physical quantity to be
 328 routinely measured (for example, radiation energy/quality or visible light
 329 spectrum) and shall be compared in the same physical geometry.

330 **(c) The procedure(s) for inter-comparison shall be documented and**
 331 **available for review by the department.**

332 ~~(6) In addition to the requirements in 2.4.4.5, instruments used for the certification~~
 333 ~~evaluation report to measure the air kerma or air kerma rate of mammography~~
 334 ~~machines shall be calibrated at least once every two (2) years and each time the~~
 335 ~~instrument is repaired.~~

Comment [JJ22]: This provision deleted as it is addressed under the general instrument calibration frequency requirements of 2.4.4.5(2).

DRAFT 2 05/13/2014

- 336 (a) ~~The instrument calibration shall be NIST traceable; and~~
- 337 (b) ~~The instrument shall be calibrated~~ with an accuracy of \pm six (6) percent (95 percent
- 338 confidence level) in the mammography energy range.

339 2.4.5 ~~Approval~~ **Registration of an specific radiation machine Operators.**

340 2.4.5.1 ~~X-ray Machine Operator Subject to Appendix 2D~~ **Limited Scope Operator.**

341 (1) **Each individual operating an x-ray system on living humans in the State of**

342 **Colorado, shall be registered as a Limited Scope Operator consistent with**

343 **2.4.5.1(2), except for:**

344 (a) **Those individuals subject to 2.6.1.5, 2.6.1.6, 2.6.1.7, 2.6.1.8, 2.6.1.10,**

345 **2.6.1.11, and 2.6.1.12, or**

346 (b) **Those individuals having current registration with the American**

347 **Registry of Radiologic Technologists in radiography.** ~~Consistent with and~~

348 ~~governed by 2-6-1, prior to operating an x-ray system on living humans in the~~

349 ~~State of Colorado, each individual shall meet the x ray machine operator~~

350 ~~adequate radiation safety training and experience criteria established in~~

351 ~~Appendix 2D, in particular 2D.2.4 for a limited scope x ray machine operator.~~

352 (2) **Registration**

353 (a) **The applicant for LSO registration must complete the requirements of**

354 **2D.2.1, 2D.2.2 and 2D.2.3 in a structured and documented training program**

355 **in order to apply for registration as a Limited Scope Operator.**

356 (b) **Each Limited Scope Operator shall complete an application with all of**

357 **the information required by the form and instructions, together with the fee**

358 **required by Part 12, Category 24 and the fee required by the American**

359 **Registry of Radiologic Technologists.**

360 (i) **The Form R-70 series application shall be used to initiate the**

361 **registration process.**

362 (ii) **The Form R-71 series application shall be used to confirm the**

363 **completion of the requirements of 2D.2.1, 2D.2.2 and 2D.2.3.**

364 (c) **Application for registration as a Limited Scope Operator shall be made**

365 **within one year upon completion of the requirements of 2D.2.1 and within**

366 **ninety (90) calendar days upon completion of the requirements of 2D.2.2**

367 **and 2D.2.3.**

368

369 (d) **If an applicant cannot achieve a passing score per 2D.2.4 within three**

370 **attempts, the applicant must restart the training required by 2D.2.1, 2D.2.2,**

371 **and 2D.2.3.**

372 (e) **Registrants must meet the requirements of 2D.2.5 in order to renew the**

373 **Limited Scope Operator approval.**

374 (i) **The Form R-95 series application shall be used to renew the**

375 **registration for a Limited Scope Operator.**

376 (2) ~~Application for renewal as a limited scope x ray machine operator, accompanied by~~

377 ~~the required fee(s) and evidence of 24 hours of continuing education as~~

378 ~~prescribed in Appendix 2D and not inconsistent with 2-6-1, shall be submitted at~~

Comment [JJ23]: Section 2.4.5 does not contain added requirements and reflects current department practice in registering individuals. The section is updated to provide detailed information to guide the user through the process.

The requirement for registration of CT operators is removed from this section as the department defers to nationally accepted certification requirements.

DRAFT 2 05/13/2014

379 | least thirty (30) calendar days prior to the expiration of each two-year registration
380 | period.

381 | **2.4.5.2** Computed Tomography Operator Subject to Appendix 2E.

Comment [BNV24]: NOTE: The state registration pathway for Computed Tomography Operators will no longer be available after July 30, 2015. After this date, the Department will defer to the national registration process administered by the American Registry of Radiologic Technology.

382 | (1) **Each individual operating a computed tomography system on living humans**
383 | **shall be registered with the Department as a Computed Tomography**
384 | **Operator, except for:**

385 | (a) **Those individuals having current registration with the American**
386 | **Registry of Radiologic Technologists in radiography and certification in**
387 | **computed tomography; or**

388 | (b) **those individuals having current registration with the American Registry**
389 | **of Radiologic Technologists in nuclear medicine technology or individuals**
390 | **registered with the Nuclear Medicine Technology Certification Board**
391 | **(NMTCB) as a certified nuclear medicine technologist; or**

392 | (c) **those individuals having current registration with the American**
393 | **Registry of Radiologic Technologists in radiation therapy.**~~Consistent with~~
394 | ~~and governed by 2.6.1, prior to operating a computed tomography system on~~
395 | ~~living humans, each individual shall at minimum meet the Computed~~
396 | ~~Tomography Operator adequate radiation safety training and experience criteria~~
397 | ~~established in Appendix 2E.~~

398 | **(2) Registration**

399 | (a) **The applicant for Computed Tomography Operator must complete the**
400 | **requirements of Appendix 2E, 2E.2 in a structured and documented training**
401 | **program.**

402 | (b) **Application for registration as a Computed Tomography Operator shall**
403 | **contain all of the information required by the form and instructions,**
404 | **together with the fee required by Part 12, Category 24.**

405 | (i) **The Form R-95 series shall be used to document the**
406 | **requirements of 2E.2.2, 2E.2.3 and 2E.2.4.**

407 | **(3) The state will no longer register Computed Tomography Operators under**
408 | **Appendix 2E.2 after July 30, 2015.**

Comment [JJ25]: The Department registration pathway for approval to operate a CT will no longer be available after July 30, 2015.

409 | **2.4.5.3** Bone Densitometry Equipment Operator (BDEO) ~~Subject to Appendix 2F.~~

The department has determined that the nationally recognized registry process provided by the ARRT (or equivalent) is necessary to prove competence for the safe use of medical CT imaging systems.

410 | (1) ~~Consistent with and governed by 2.6.1, prior to operating a bone densitometry x ray~~
411 | ~~system on living humans, each individual shall at minimum meet the Bone~~
412 | ~~Densitometry Equipment Operator adequate radiation safety training and~~
413 | ~~experience criteria established in Appendix 2F, in particular 2F.2.4.~~**Each**
414 | **operator of a dual-energy x-ray absorptiometry system used on a living**
415 | **human shall be registered as a Bone Densitometry Equipment Operator,**
416 | **except for:**

Comment [JJ26]: Section 2.4.5.2 does not contain new requirements and reflects current department practice in registering such individuals. The section is updated to provide detailed information to guide the user through the process.

417 | (a) **Those individuals registered with the American Registry of Radiologic**
418 | **Technologists as a radiologic technologist, nuclear medicine technologist**
419 | **or radiation therapist; or**

420 | (b) **Those individuals registered with the Nuclear Medicine Technology**
421 | **Certification Board (NMTCB) as a certified nuclear medicine technologist.**

422 | **(2) Registration**

Comment [BNV27]: This section was written to reflect our current registration process.

DRAFT 2 05/13/2014

- 423 (a) The applicant must complete the requirements of 2F.2.1, 2F.2.2, and
 424 2F.2.3 in a structured and documented training program in order to apply
 425 for registration as a Bone Densitometry Equipment Operator.
- 426 (b) Applicants with International Society of Clinical Densitometry (ISCD)
 427 certification must, at a minimum, document the completion of the
 428 requirements of 2F.2.1.1 through 2F.2.1.3.
- 429 (i) ISCD-certified applicants have met the requirements of 2F.2.1.4
 430 through 2F.2.1.9, 2F.2.2 and 2F.2.3 and are exempt from the requirements
 431 of 2F.2.4
- 432 (c) Application for the Bone Densitometry Equipment Operator registration
 433 shall contain all of the information required by the form and instructions,
 434 together with the fee required by Part 12, Category 24 and the fee required
 435 by the American Registry of Radiologic Technologists, if applicable.
- 436 (i) The Form R-80 series application shall be used to initiate the
 437 registration process.
- 438 (ii) The Form R-81 series application shall be used to confirm the
 439 completion of the requirements of 2F.2.1, 2F.2.2 and 2F.2.3.
- 440 (d) Application for registration as a Bone Densitometry Equipment
 441 Operator shall be made within one year upon completion of the
 442 requirements of 2F.2.1 and within ninety (90) calendar days upon
 443 completion of the requirements of 2F.2.2 and 2F.2.3
- 444 (e) If an applicant cannot achieve a passing score per 2F.2.4 within three
 445 attempts, the applicant must restart the training required by 2F.2.1, 2F.2.2
 446 and 2F.2.3.
- 447
- 448 (f) Bone Densitometry Equipment Operator registration is issued for a
 449 period of three years.
- 450 (g) Registrants must meet the requirements of 2F.2.5 in order to renew the
 451 Bone Densitometry Equipment Operator approval.
- 452 (2) Application for renewal, accompanied by the required fee(s) and evidence of 18
 453 hours of continuing education as prescribed in Appendix 2F, shall be submitted
 454 at least thirty (30) calendar days prior to the expiration of each three year
 455 registration period.

Comment [BNV28]: The requirements of this provision are addressed by requirements in 2.4.6 and Appendix F.

2.4.5.4 ~~Qualified~~ Provisional Mammographer.

- 457 (1) ~~Prior to performing any mammography examination in the State of Colorado, each~~
 458 ~~individual operator shall be a qualified mammographer who meets the adequate~~
 459 ~~radiation safety training and experience qualification criteria established in~~
 460 ~~Appendix 2M~~ Any individual performing mammography exams under
 461 supervision in order to meet the initial requirements of 2M.1.3 shall be
 462 registered as a Provisional Mammographer prior to performing such
 463 exams.
- 464 (2) The application to be registered in the State of Colorado as a Provisional
 465 Mammographer shall be submitted on the Form R-64 series application and
 466 shall contain all information required by the Department as indicated on the
 467 form(s) and all accompanying instructions.

DRAFT 2 05/13/2014

468 (3) Provisional mammographer registration is issued for a period of one year.

469 (4) A Provisional Mammographer registration may be renewed once.

470

471

472 DEPARTMENT NOTICE OF REGISTRATION

473 2.4.6 General Requirements Applicable to Issuance and Maintenance of Department Registrations.

474 2.4.6.1 The application to be registered in the State of Colorado shall be submitted on the
475 appropriate Department form(s) and shall contain all information required by the
476 Department as indicated on the form(s) and all accompanying instructions.

477 2.4.6.2 Upon a determination that an applicant meets the requirements of the regulations, the
478 Department shall issue a Notice of Registration.

479 ~~2.4.6.2~~ 2.4.6.3 The Department may incorporate in the Notice of Registration at the time of
480 issuance, or thereafter by appropriate rule, regulation, or order, such additional
481 requirements and conditions with respect to the registrant's activities as the Department
482 deems appropriate or necessary.

483 ~~2.4.6.3~~ 2.4.6.4 Approval to conduct or perform activities in accordance with the registration
484 requirements of these regulations shall be:

485 (1) For a period of two (2) years, except as otherwise specified by these regulations or
486 the Department; and

487 (2) Limited to the category or categories of activities specifically designated in the
488 Notice of Registration.

489 ~~2.4.6.4~~ 2.4.6.5 The registrant shall notify the Department in writing within thirty (30) calendar
490 days of making any change which would render inaccurate of the information contained in
491 the application for registration and/or the Notice of Registration.

492 ~~(1) Each servicing and services registrant under 2.4.2 shall notify the Department each
493 time the registrant adds a service technician (or several service technicians at
494 the same time) to the list of service technicians authorized to provide radiation
495 machine service(s).~~

496 ~~(a) The registrant will be assessed an acceptance review fee as required by Part
497 12 for each list change.~~

498 ~~(b) Changes made during renewal will not be assessed an acceptance review
499 fee.~~

500 2.4.6.5-6 Except as provided by ~~2.4.6.6~~ 2.4.6.7, each Notice of Registration shall expire at the
501 end of the month in the year stated therein.

502 2.4.6.6-7 In any case in which a registrant, not less than thirty (30) calendar days prior to the
503 expiration of the registrant's authorization, has filed an application in proper form for
504 renewal or for a new registration authorizing the same activities, such existing
505 authorization shall not expire until final action by the Department.

506 2.4.6.7-8 The Department may will not review or otherwise process a new application or
507 application for renewal for which no fee remittance is received.

Comment [BNV29]: This requirement is moved to Section 2.4.2.3(5) as it only applies to Service Company registrants.

DRAFT 2 05/13/2014

508 (1) ~~An application that is incomplete or not accompanied by the prescribed fee(s) will not~~
509 ~~necessarily be returned to the applicant.~~

510 ~~(2)~~ All application fees are non-refundable.

511 2.4.6.8-9 The Department may deny, withdraw, limit or qualify its approval of any person to
512 perform activities upon determining that such action is necessary in order to prevent
513 undue hazard to health and safety, or for other reasonable cause.

514 2.4.7 ~~Peremptory Registrant Obligations.~~ **Providing Notice of Registrant's Rights**

515 2.4.7.1 Whenever a business relationship exists between the qualified inspector and services
516 and ~~servicing provider (a registered service company),~~ a "Notice of Registrant's
517 Rights" Form R-65 shall be ~~furnished provided~~ **to the registered facility** ~~the registrant~~
518 prior to beginning the service or evaluation, including:

519 (1) When a qualified inspector is also ~~authorized-registered~~ to perform services and
520 servicing;

521 (2) When a qualified inspector is also a qualified expert; and

522 (3) When a qualified inspector, a qualified expert and/or a services and servicing
523 provider is a member of the same corporation, partnership or other formal
524 business relationship.

525 ~~2.4.7-2.4.8~~ 2.4.8 No person, in any advertisement, shall refer to the fact that the person is registered with the
526 Department pursuant to the provisions of 2.4.1, 2.4.2, 2.4.3 ~~and~~, 2.4.4, **and 2.4.5** and no person shall
527 state or imply that the quality of conduct or performance of any activity under such registration has been
528 approved or endorsed by the Department.

529 **CERTIFICATION EVALUATION**

530 **2.5 Certification Evaluations** ~~of Radiation Producing Machines.~~

Comment [BNV30]: This section applies to both machines and facilities and therefore the section is titled more broadly.

531 2.5.1 Frequency of Certification Evaluations.

532 2.5.1.1 Each radiation machine registrant shall have its radiation machine(s) and facility
533 evaluated by a Department-approved qualified inspector annually, except as provided in
534 2.5.1.2 through 2.5.1.5 ~~(section 2.5.1 is summarized in Table 2-1).~~

535 (1) Each certification evaluation shall ~~be capable of determining that~~ **determine if** the
536 machine is safe for each intended use and **is** in compliance with the
537 specifications of the equipment manufacturer and these regulations.

538 (2) ~~Each certification evaluation is in addition to and not intended to replace the~~
539 ~~manufacturer(s) recommended equipment service and/or repair procedures or~~
540 ~~facility quality assurance programs.~~

Comment [BNV31]: This provision has been moved to Section 2.6.5.

541 ~~(3)~~ Each certification evaluation subsequent to the initial certification evaluation shall be
542 completed in or prior to the same calendar month as the previous certification
543 evaluation.

544 ~~(4)~~ The calendar month of a certification evaluation of a machine in any month prior to
545 the month in which it is due shall become the calendar month in which the
546 subsequent certification is due.

547 ~~(5)~~ A certification evaluation conducted after the month in which it was due shall not
548 ~~alter or~~ change the month in which subsequent certification evaluations are due.

DRAFT 2 05/13/2014

549 2.5.1.2 Each non-healing-arts ~~fixed industrial radiography, analytical, cabinet, or self contained~~
 550 ~~airport or port of entry inspection~~ x ray imaging machine or system **regulated by Parts 5,**
 551 **8 or 9** shall be inspected at least every two (2) years. **These include, but are not**
 552 **limited to, x-ray machines used for industrial radiography, nondestructive analysis,**
 553 **forensics or security screening.**

554 2.5.1.3 Each bone densitometry, dental, podiatry or veterinary radiation machine shall be
 555 inspected at least every three (3) years, except that:

Comment [BNV32]: Stakeholder request

556 (1) Each radiographic x-ray machine **used in non-intraoral dentistry or podiatry or**
 557 ~~tomographic or computed tomographic system~~ that is capable of **a continuously**
 558 variable kilovoltage peak (kVp) or **continuously** variable milliamperage (mA) or
 559 **continuously** variable collimation ~~and used in non-intraoral dentistry or podiatry~~
 560 shall be inspected annually.

561 (2) Each machine used in podiatry that is capable of operating at more than 30 mA shall
 562 be inspected annually.

563 (3) Each volumetric dental imaging system **or computed tomographic system** shall be
 564 inspected annually.

565 (4) ~~2.5.1.4~~ Each ~~human use~~ portable hand-held instrument used for any purpose **on**
 566 **living humans** shall be inspected annually.

Comment [BNV33]: The inspection frequency table was reinstated (from the original proposed draft) at the request of several stakeholders.

567 **TABLE 2-1: SUMMARY OF FREQUENCY OF RADIATION MACHINE INSPECTION**

Category	Frequency
Each radiation machine, including under reciprocity, unless otherwise provided below:	Every year
Each non-healing-arts x-ray imaging machine or system regulated by Parts 5, 8 or 9 Each non-healing-arts fixed industrial radiography or analytical, cabinet, airport or port of entry x ray machine or system	Every two years
Each bone densitometry, dental, podiatry or veterinary radiation machine, except as required below:	Every three years
Each radiographic x-ray machine used in non-intraoral dentistry or podiatry that is capable of continuously variable kilovoltage peak (kVp) or continuously variable milliamperage (mA) or continuously variable collimation. Pursuant to 2.5.1.3(1), each radiographic x ray machine or tomographic or computed tomographic system used with a variable setting (kVp, mA or collimation) in non-intraoral dentistry or podiatry	Every year
Pursuant to 2.5.1.3(2), each x-ray machine used in podiatry at more than 30 mA	Every year
Pursuant to 2.5.1.3(3), each volumetric dental imaging system or computed tomographic system	Every year
Pursuant to 2.5.1.3(4), each hand-held x-ray machine used on living humans Pursuant to 2.5.1.4, each human use hand-held x-ray machine	Every year

568
 569 ~~2.5.1.5~~ **2.5.1.4** Each new installation of a radiation machine system or replacement component
 570 ~~that will affect or could potentially affect radiation output shall be evaluated within no~~
 571 ~~more than ninety (90) calendar days of installation~~ **Each radiation machine system**
 572 **shall be evaluated within ninety (90) calendar days of installation or service that**
 573 **could potentially affect radiation output or technique settings. Such service**
 574 **includes, but is not limited to, the repair or replacement of high voltage generators,**
 575 **tube heads, consoles or image receptor systems,**

576 ~~2.5.1.6~~ **2.5.1.5** Each new installation of a mammography system shall be evaluated by a **qualified**
 577 **inspector** **registered medical physicist** authorized in mammography prior to being used
 578 to perform any human examination.

DRAFT 2 05/13/2014

579 ~~2.5.1.7~~**2.5.1.6** Any radiation machine and/or facility not inspected in accordance with 2.5.1.1
 580 through ~~2.5.1.6~~**2.5.1.5**, or otherwise determined to be out of compliance with these
 581 regulations, shall be subject to a Department enforcement inspection and subject to the
 582 fees specified in Part 12.

583 2.5.2 Procedures for Certification Evaluations by Qualified Inspectors.

584 2.5.2.1 Each qualified inspector who performs a certification evaluation of a radiation machine
 585 and/or facility evaluation shall use procedures that are sufficient to determine compliance
 586 with these regulations.

587 2.5.2.2 If a radiation machine fails to meet any requirement specified by these regulations,
 588 including manufacturer's required specifications, the qualified inspector shall immediately
 589 so inform the registrant and/or RSO ~~designated pursuant to 2.4.1.1.~~

590 2.5.2.3 If the radiation machine is determined to be unsafe (as provided in Part 6 and described
 591 in Appendix 6D), the qualified inspector shall affix to such radiation machine system, in a
 592 location clearly visible to the **operator and patient, if applicable**, an "Unsafe for Use"
 593 label authorized and issued by the Department, indicating, as applicable, that such
 594 machine is not authorized for human, animal or other use.

595 2.5.2.4 Reporting and Labeling Procedures.

596 (1) Each qualified inspector shall ~~certify each determination of compliance and be~~
 597 ~~responsible to~~ provide an accurate and complete Certification Evaluation Report
 598 to the registrant and to the Department on Form R-59-1, "X ray Machine
 599 Certification Evaluation Report," in accordance with the instructions contained in
 600 that form.

601 (a) A clear and legible report may be substituted for Form R-59-1, provided that it
 602 is in the same format and provides all of the information required by
 603 Form R-59-1.

604 (b) Violations of the regulations not related to the performance of the specific
 605 radiation machine(s) shall be reported to the **registrant and** Department
 606 using Form R-59-2, "X-ray Facility Compliance Evaluation Report," in
 607 accordance with the instructions contained in that form.

608 ~~(2) A qualified inspector shall provide to the registrant and Department a copy of the R-~~
 609 ~~59-1 or R-59-2 Report.~~

Comment [BNV34]: Duplicate provision removed.

610 (ac) ~~The Report(s) required by 2.5.2.4(1) Reports submitted to the~~
 611 **Department** shall indicate full or partial compliance and any specific
 612 violation of these regulations.

613 (bd) ~~The Report(s) required by 2.5.2.4(1) Reports submitted to the~~
 614 **Department** shall include recommendations for corrective actions by the
 615 registrant (if applicable) to assist in achieving full compliance and/or
 616 improving radiation safety and the quality of the imaging process.

617 (e) **The Department shall be notified within three (3) business days of**
 618 **radiation machine violations.**

Comment [JJ35]: This is a requirement of the Colorado Radiation Control Act.

619 ~~(c) Report(s) required by 2.5.2.4(1) that does not indicate violations~~
 620 ~~Reports which do not identify any violations~~ shall be received by the
 621 Department no later than fifteen (15) calendar days after the inspection
 622 date, unless otherwise authorized by the Department.

623 (23) ~~The qualified inspector shall personally affix, or personally direct the registrant~~
 624 ~~exactly how and where to affix, a~~ certification label issued by the Department

DRAFT 2 05/13/2014

625 **shall be affixed** in a location clearly visible to the machine operator and patient,
 626 **if applicable, if (and only if) and** when it is determined that the **machine**
 627 requirements of these regulations, ~~including manufacturer's required~~
 628 ~~specifications,~~ are fully met.

629 (a) For a machine that was found to be in full compliance, the certification label
 630 shall be affixed no later than fifteen (15) calendar days (unless otherwise
 631 authorized by the Department) after the inspection date.

632 (b) For a noncompliant machine, the certification label shall be affixed no later
 633 than fifteen (15) calendar days (unless otherwise authorized by the
 634 Department) after the date that full compliance was achieved.

635 (34) Each qualified inspector shall ensure that the following ~~closeout~~ documentation is
 636 provided to the Department to confirm that each violation was corrected as
 637 required by 2.6.3.1 and/or 2.6.4.1 within thirty (30) calendar days of the date of
 638 inspection.

639 (a) For a noncompliant machine for which full compliance has been achieved,
 640 the completed documentation (on Form R-59-1 or equivalent, ~~signed by~~
 641 ~~the qualified inspector as completed and including the number of the~~
 642 ~~label that was affixed~~) shall be received by the Department no later than
 643 fifteen (15) calendar days after the date that compliance was achieved.

644 (b) For a noncompliant facility, the completed documentation (on Form R 59-2 or
 645 equivalent ~~signed by the registrant as completed~~) shall be received by
 646 the Department no later than fifteen (15) calendar days after the date
 647 that full compliance was achieved.

648 (45) Concealing, defacing or altering of Department-issued **certification** labels is
 649 prohibited.

650 (56) Repeated failure **by a qualified inspector**, to affix certification labels ~~and/or~~ to
 651 accomplish timely completion of certification evaluation reports as provided in
 652 this subsection shall be subject to review and audit as provided in 2.9 and also
 653 subject to the non routine inspection fee as provided in Part 12.

654 2.6 Facility Registrant Responsibilities.

655 2.6.1 In any facility regulated by or requiring registration under these regulations, the registrant shall
 656 allow only individuals who are adequately trained in radiation safety and the safe and effective
 657 use of the machine to operate any radiation machine.

658 2.6.1.1 The facility registrant shall document evaluation of the qualifications of each individual
 659 permitted to operate any radiation machine at the facility.

660 (1) Each operator shall meet all radiation safety training and experience requirements of
 661 the respective State of Colorado professional licensure board, as applicable, and
 662 any applicable requirements of this Part 2.

663 (2) ~~Consistent with 2.4.1.1(3)(b), the~~ The registrant shall maintain a list of **all operators** ~~(or~~
 664 ~~have a policy in place that specifies how such a list will be provided on request)~~
 665 ~~who have been determined to be adequately trained in accordance with these~~
 666 ~~regulations of any radiation machine used by the facility registrant.~~

667 (a) For fluoroscopy equipment used in examination of a living human, a list of
 668 ~~qualified individuals~~ **operators and individuals providing technical**
 669 **supervision of operators** shall be maintained ~~as required by 2.6.1.5.~~

Comment [JJ36]: The intent of the revised language is to ensure that the facility maintains a list of all machine operators.

The radiation safety training and experience requirements, and other requirements for maintaining documentation of their qualifications are discussed in this and subsequent sections and (as applicable) the Appendices of Part 2.

DRAFT 2 05/13/2014

- 670 (b) The list of all operators **and supervisors** ~~qualified for fluoroscopy~~ shall be
671 updated at least annually as part of the radiation safety program required
672 by 4.5.
- 673 (3) Records of such evaluations shall:
- 674 (a) Include current certifications of qualification;
- 675 (b) Be ~~maintained~~**updated annually** by the facility; and
- 676 (c) Be produced for examination upon request during any inspection conducted
677 under the requirements of these regulations.
- 678 2.6.1.2 A physician, chiropractor, dentist, podiatrist, or veterinarian who has a current active
679 license from the appropriate State of Colorado professional licensure board is considered
680 to have demonstrated adequate training in radiation safety and the safe and effective use
681 of the radiation machine (consistent with 2.6.1.5) and may operate radiation machines as
682 part of medical, chiropractic, dental, podiatric or veterinary practice, respectively.
- 683 2.6.1.3 For a radiologist assistant "adequately trained" shall mean that the individual is qualified
684 as provided in Appendix 2G.
- 685 2.6.1.4 For any radiographic x-ray system used on a living human (~~not in~~consistent with 2.6.1.2,
686 2.6.1.3, and 2.6.1.5 through 2.6.1.14), "adequately trained" shall mean that the individual
687 meets the requirements of Appendix 2D.
- 688 (1) Limited-scope x-ray machine operator approval is limited to imaging procedures for x-
689 ray examination of the skull, chest, hip/pelvis and spine/sacrum, upper
690 extremities and lower extremities.
- 691 (2) A limited-scope x-ray machine operator shall not perform radiologic procedures
692 involving the administration or utilization of contrast media, bone **density**
693 **densitometry**, ~~or fluoroscopic equipment~~, mammography, computed
694 tomography, or radiation therapy procedures.
- 695 2.6.1.5 For fluoroscopy equipment used in examination of a living human, "adequately trained"
696 shall mean that, in addition to meeting all applicable requirements in 2.6.1.1 through
697 2.6.1.4, each ~~healing arts facility shall make a written determination that any~~ individual
698 who either supervises a fluoroscopy procedure or operates a fluoroscopy imaging system
699 ~~has~~**shall have** adequate training in its safe operation. ~~including This documented~~
700 training **shall be documented and include in** the following:
- 701 (1) Fundamental principles of radiation protection;
- 702 (2) Biological effects of ionizing radiation;
- 703 (3) Safe operation of fluoroscopy equipment for each mode of operation to be used;
- 704 (4) Dose reduction techniques for fluoroscopy; and
- 705 (5) Applicable radiation regulations.
- 706 2.6.1.6 For mammography equipment used in radiography of the human breast, "adequately
707 trained" shall mean that the individual operator meets the ~~registration and/or other~~
708 requirements of Appendix 2M.
- 709 2.6.1.7 For any computed tomography system used on a living human, "adequately trained"
710 shall mean that the individual operator meets the ~~registration and/or other~~ requirements
711 of Appendix 2E.

DRAFT 2 05/13/2014

- 712 2.6.1.8 For any bone densitometry equipment used in examination of a living human,
713 "adequately trained" shall mean that the individual operator meets the ~~registration and/or~~
714 ~~other~~ requirements of Appendix 2F.
- 715 2.6.1.9 For radiographic equipment used in the practice of medicine, "adequately trained" shall
716 mean that the individual operator meets all applicable requirements of the Colorado State
717 Board of Medical Examiners (in particular Rule 700, "State Board of Medical Examiners
718 Rules and Regulations Regarding Education and Training Standards for Unlicensed
719 Personnel Exposing Ionizing Radiation" of 3 CCR 713-16).
- 720 2.6.1.10 For radiographic equipment used in chiropractic, "adequately trained" shall mean that
721 the individual operator meets all applicable requirements of the Colorado State Board of
722 Chiropractic Examiners (in particular Rule 19, "Safety Training for Unlicensed
723 Chiropractic Personnel," of 3 CCR 707-1).
- 724 2.6.1.11 For radiographic equipment used in dentistry, ~~including Volumetric Dental Imaging~~
725 ~~Systems~~, "adequately trained" shall mean that the individual operator meets all
726 applicable requirements of the Colorado State Board of Dental Examiners (in particular
727 Rule X, "Minimum Standards for Qualifications, Training and Education for Unlicensed
728 Personnel Exposing Patients to Ionizing Radiation," of 3 CCR 709-1).
- 729 2.6.1.12 For radiographic equipment used in podiatry, "adequately trained" shall mean that the
730 individual operator meets all applicable requirements of the State of Colorado Podiatry
731 Board (in particular Rule 700 of 3 CCR 712-9).
- 732 2.6.1.13 For radiographic equipment used in veterinary medicine, "adequately trained" shall
733 mean that the individual operator meets all applicable requirements of the State of
734 Colorado Board of Veterinary Medicine (in particular 4 CCR 727 1).
- 735 2.6.1.14 An individual, enrolled in an ARRT-recognized program or graduated ~~therefrom~~
736 ~~from~~ **such a program**, may operate radiation machines so long as the individual works under
737 the direct supervision of a radiologic technologist or other qualified trainer and has
738 documentation of having completed education and experience equal to that specified in
739 the program.
- 740 (1) A graduate from an ARRT-recognized program is granted ninety (90) calendar days
741 from the date of graduation to schedule, take and pass the **ARRT** radiologic
742 technology registry examination.
- 743 (2) During the 90-day period allowed by 2.6.1.14(1), the graduate is considered to satisfy
744 Appendix 2D **requirements**.
- 745 (3) A student or graduate who fails to pass the registry examination has not met the
746 requirements of Appendix 2D and shall not operate any radiation machine
747 system on a living human unless otherwise authorized by the Department.
- 748 2.6.1.15 For radiation machines used in non-healing-arts applications, "adequately trained" shall
749 mean that the individual operator meets the requirements of Appendix 2N.
- 750 (1) For industrial radiography, the requirements in Part 5 apply, as stated in 2N.1.
- 751 (2) The requirements of 2N.2 apply to all non-healing-arts applications (including but not
752 limited to analytical, forensic, morgue, and homeland security uses) not subject
753 to Part 5.
- 754 2.6.1.16 For assembly, installation and repair of radiation machines, "adequately trained" shall
755 mean that the individual service technician meets the requirements of Appendix 2H.

Comment [BNV37]: Clarification added based on stakeholder comments.

DRAFT 2 05/13/2014

756 2.6.1.17 Department recognition of training as adequate pursuant to 2.6.1.3 through 2.6.1.16
757 shall pertain only to the areas of training and experience specifically identified in these
758 regulations.

759 ~~2.6.1.18 If and when an application to the Department is required, the application for adequate~~
760 ~~training review and approval or for an examination administered by the Department shall~~
761 ~~be:~~

Comment [JJ38]: This provision removed as it is addressed by other sections of the rule.

762 ~~(1) Submitted on forms prescribed by the Department; and~~

763 ~~(2) Completed to contain all the information required by the form and all accompanying~~
764 ~~instructions; and~~

765 ~~(3) Accompanied by the application fee(s) specified in Part 12; and~~

766 ~~(4) Accompanied by evidence of continuing education, if and when required.~~

767 ~~2.6.1.18~~ **2.6.1.18** The Department may, upon application or upon its own initiative, accept as
768 being adequate:

769 (1) Documented combinations of radiation safety training and experience; or

770 (2) Equivalent approval by another state or agency.

771 2.6.2 The facility registrant shall ensure that all required certification and compliance evaluations are
772 performed as required by 2.5.2 in accordance with the instructions that accompany Form R-59-1,
773 "X-ray Machine Certification Evaluation Report" and Form R-59-2, "X-ray Facility Compliance
774 Evaluation Report."

775 **2.6.2.1 Upon receipt of a Form R-59-1 signed by a registered qualified inspector, the**
776 **facility shall complete the certification evaluation process with that qualified inspector**
777 **unless department approval is granted or required to have the certification evaluation**
778 **done by a different qualified inspector.**

779 2.6.3 For each radiation machine finding of noncompliance (Form R-59-1), the facility registrant shall:

780 2.6.3.1 Correct any failure of a radiation machine or imaging system to meet the requirements of
781 these regulations or manufacturer's required specifications, within thirty (30) calendar
782 days or as otherwise specified by the Department, in particular as identified on Form R
783 59 1, "X ray Machine Certification Evaluation Report."

784 2.6.3.2 Not use a radiation machine that has been determined to be unsafe for use, ~~in particular~~
785 ~~according to any of~~ **as determined by** the criteria in **Part 6**, Appendix 6D, until
786 subsequent certification by a Department-approved qualified inspector or the
787 Department.

788 2.6.3.3 Permit only a person who has provided evidence of current registration with the
789 Department in accordance with 2.4.2 to provide radiation machine servicing or services.

790 2.6.3.4 **Notify the qualified inspector who issued the Certification Evaluation Report when**
791 **the radiation machine violations have been corrected.** ~~Upon correction of any~~
792 ~~radiation machine item of violation, confirm to the qualified inspector that indicated~~
793 ~~repairs have been completed.~~

794 (1) A copy of the Certification Evaluation Report, Form R-59-1, with the service repair
795 certification signed and dated by the person providing service, shall be provided
796 to the qualified inspector who **initiated the certification evaluation.** ~~signed the~~
797 ~~original Form R-59-1.~~

DRAFT 2 05/13/2014

- 798 (2) A copy of any service report shall be provided to the qualified inspector upon request
799 as evidence of completed corrective action.
- 800 2.6.3.5 **Retain documentation that each indicated violation has been corrected to bring the**
801 **machine into compliance in accordance with Section 2.6.6.**~~Upon correction of any~~
802 ~~item of violation identified on Form R-59-1, "X-ray Machine Certification Evaluation~~
803 ~~Report," retain documentation that each indicated violation has been corrected to bring~~
804 ~~the machine into compliance.~~
- 805 2.6.3.6 Pay the fee required by Part 12 for each certification label issued ~~to the registrant~~ by the
806 qualified inspector.
- 807 2.6.4 For each finding of facility noncompliance (Form R-59-2), the registrant shall:
- 808 2.6.4.1 Correct any violation within thirty (30) calendar days of each finding of facility
809 noncompliance (Form R-59-2) or as otherwise specified by the Department.
- 810 2.6.4.2 Provide documentation to the Department to confirm that each indicated violation has
811 been corrected to bring the facility into compliance.
- 812 (1) For any item identified for correction on Form R-59-2, "X-ray Facility Compliance
813 Evaluation Report" , provide a copy of the Form R-59-2 with the "Registrant's
814 Certification of Correction" section signed and dated by the registrant or
815 registrant's agent.
- 816 ~~2.6.4.3 Pay any fee required by Part 12.~~
- 817 **2.6.5 Each registrant shall follow all applicable manufacturer's recommended equipment**
818 **maintenance and quality assurance procedures.**
- 819 2.6.~~56~~ Record Retention and Reports.
- 820 2.6.~~56~~.1 The registrant shall maintain each diagnostic image in a medical record for each patient
821 as specified by the applicable State of Colorado professional licensure board; absent an
822 applicable board specification, record retention shall be for a period not less than ten (10)
823 years or any period of minority or incompetency.
- 824 2.6.~~56~~.2 The registrant shall maintain for the duration of the registration, records of each
825 shielding design, and each radiation survey required by 6.9.4.1, performed for the facility.
- 826 (1) Upon any transfer of ownership, such shielding design(s) and survey records shall
827 also be transferred to the new owner.
- 828 2.6.~~56~~.3 The registrant shall maintain for the duration of the registration, until a machine is retired
829 from service, the operator and service manual(s) provided by the manufacturer, if
830 available.
- 831 (1) If the operator manual is not obtainable from the manufacturer, such a manual of
832 written operating procedures shall be developed and maintained by the
833 registrant, including:
- 834 (a) A description, including purpose and function, of each control panel knob,
835 button, and meter;
- 836 (b) Techniques for collimation and centering of the beam to the image receptor;
- 837 (c) The function of all locks and detents; and
- 838 (d) Emergency shutdown instructions.

DRAFT 2 05/13/2014

839 2.6.~~56~~.4 The registrant shall maintain for inspection for a period of three (3) years for each x-ray
840 imaging or image processing system (six years for a facility or machine inspected only
841 every three years) records of:

842 (1) Operator certifications;

843 (2) Operator training;

844 (3) Service and repair reports;

845 **(4) Radiation machine disposition**

846 **(45)** Radiation machine inspection certification evaluation reports;

847 **(56)** Facility compliance evaluation reports; and

848 **(67)** Notices of violation.

849 **2.7 Service Company Registrant Responsibilities.**

850 2.7.1 No person shall certify or declare that a radiation machine or component, ~~or the supplies used in~~
851 ~~connection with such a machine or component~~, is ready for its intended use, ~~unless and~~-until:

852 2.7.1.1 The shielding design has been completed ~~if and~~ as required by 6.3.2, as documented
853 ~~(without exception after June 30, 2010)~~ by a comment on Form FDA 2579 or a signed
854 and dated notification to the Department; **and**

855 2.7.1.2 The machine ~~and/or~~ component ~~(and any associated equipment and supplies), after~~
856 ~~having properly been made operational, demonstrably meet~~ **meets** the manufacturer
857 specifications and the requirements of these regulations; and

858 2.7.1.3 The registrant has been provided, by the vendor, assembler ~~and/or~~ services and
859 servicing personnel, ~~as required by the Federal Performance Standard (21 CFR Chapter~~
860 ~~I, Subchapter J, April 1, 2010) and these regulations~~, the following:

861 (1) All guidance documents, including instruction manuals, manufacturer specifications
862 and information notices, that are applicable to each newly installed radiation
863 machine system or component; and

864 (2) A checklist of the registrant's responsibilities under these regulations, including but
865 not limited to requirements of 2.6.3, in particular 2.6.3.4.

866 2.7.2 Any person who sells, leases, transfers, lends, assembles, installs, trades out or ~~disposes-repairs~~
867 any radiation machine, or component, which affects radiation output **or technique setting** in this
868 State shall notify the Department in writing within fifteen (15) calendar days of each transaction
869 subject to this section with the following information:

870 2.7.2.1 The full name and address of each person who has received the radiation machine or
871 component and the specific location within the facility; and

872 2.7.2.2 Specific details about the system or sub-system, including the manufacturer, model, and
873 serial number of each radiation machine or component transferred; and

874 2.7.2.3 The date of transfer, assembly, or installation of each radiation machine or component;
875 and

876 2.7.2.4 A completed Form FDA 2579 or a signed and dated affirmation that all instruction
877 manuals, written instructions and regulations applicable to the newly installed radiation
878 machine system or components have been delivered to the registrant.

DRAFT 2 05/13/2014

879 2.7.3 A report of assembly (Form FDA 2579 or equivalent) ~~in compliance with requirements of the~~
 880 ~~Federal Performance Standard (21 CFR 1020.30(d), April 1, 2010)~~ shall be submitted to the
 881 Department within fifteen (15) calendar days following completion of the assembly or installation.

882 2.7.3.1 The assembly or installation is considered completed when the unit has properly been
 883 made operational and is ready for its intended use.

884 2.7.3.2 Form FDA 2579 or an equivalent report suffices in lieu of any reports required in 2.7.2.

885 2.7.4 ~~If~~ **As** required by the Department on a Certification Evaluation Report, Form R-59-1, a service
 886 company ~~technician that who~~ performs a radiation machine repair shall:

887 2.7.4.1 Sign, ~~as the person providing service,~~ the service repair certification section ~~of the of a~~
 888 ~~copy of the original~~ Certification Evaluation Report, Form R-59-1 **issued by the qualified**
 889 **inspector who performed the evaluation; and**

890 2.7.4.2 Provide a ~~copy~~ **written detailed description of the service** to the ~~qualified inspector who~~
 891 ~~signed the original Certification Evaluation Report, Form R-59-1, with the service repair~~
 892 ~~certification signed by the person providing service~~ **registered facility within one (1)**
 893 **business day; and**

894 ~~2.7.4.3 Provide, upon request, a copy of any additional information about the details of the repair.~~

895 **2.7.5 A service technician who performs any activity that could potentially affect the radiation**
 896 **machine output, cause a change to the clinical technique settings of the radiation machine, or**
 897 **affect image quality shall provide a written detailed description of all service to the registered**
 898 **facility within one business day of the service.**

899 **2.7.6 Any person who disables a radiation machine in order to meet the requirements of 2.3.4 shall**
 900 **be registered with the Department as a Service Company.**

Comment [BNV39]: Additional clarification added at stakeholder request

Comment [BNV40]: A requirement is added for the service company to provide a detailed description of the service to the registered facility within 1 day.

Comment [JJ41]: The addition of the one day requirement was at the suggestion of a stakeholder registrant. The stakeholder reported that service descriptions have not always been provided to the registered facility in a timely manner.

By providing the necessary documentation in a timely manner, the registered facility can better respond to outstanding machine non-compliance items.

Comment [BNV42]: This provision was added based on stakeholder request.

901 **RECIPROCITY**

902 **2.8 Out-of-State Radiation Machines.**

903 2.8.1 Subject to these regulations, any person who desires to bring radiation machines into this state for
 904 temporary use is hereby granted authorization to conduct activities using these machines for a
 905 period not to exceed a total of 180 days in any calendar year, provided that:

906 2.8.1.1 The out-of-state registration, and/or other documents authorizing the use of radiation
 907 machines issued by the agency having jurisdiction where the out-of-state registrant
 908 maintains an office for directing the registered activity and at which radiation safety
 909 records are normally maintained, does not limit the activity authorized by such document
 910 to specified installations or locations; and

911 2.8.1.2 The person proposing to bring such machines into Colorado shall give written notice to
 912 the Department at least fifteen (15) calendar days before such machine is to be used in
 913 the state, unless otherwise authorized by the Department as provided in 2.8.2. The notice
 914 shall be made using the Department's "X-ray Reciprocity Request" Form R-200 and shall
 915 include all information required by that form.

916 (1) As part of this notice, the person requesting reciprocity shall certify that:

917 (a) A copy of all applicable parts of these regulations shall be available at each
 918 use location in State of Colorado;

919 (b) Each machine has been evaluated and determined to be in compliance with
 920 these, or equivalent, regulations; and

DRAFT 2 05/13/2014

- 921 (c) The operation of each radiation machine shall be in accordance with the
922 applicable requirements of these regulations.
- 923 (2) In the case of a request to perform a healing arts screening program within the State,
924 submit a completed Form R-300, "Application for Registration – Healing Arts
925 Screening," with the reciprocity request, including all of the information required,
926 pursuant to Part 6, Appendix 6F, by the form and any accompanying instructions.
- 927 (3) In the case of a request to perform mammography screening within the State, a copy
928 of the facility's mammography certificate issued by the FDA (21 CFR 900.11(a),
929 April 1, 2010) and applicable American College of Radiology credentials shall be
930 included with the reciprocity request.
- 931 (4) The person requesting reciprocity shall also supply such other information as the
932 Department may request.
- 933 2.8.1.3 The out-of-state registrant complies with all applicable regulations of the Department; and
- 934 2.8.1.4 The out-of-state registrant shall at all times during work at any work location within the
935 State have available the pertinent documentation as required by these regulations,
936 including:
- 937 (1) Pertinent registration documentation;
- 938 (2) Written authorization from the Department for in-state activities;
- 939 (3) Applicable sections of these regulations as certified pursuant to 2.8.1.2(1)(a);
- 940 (4) Documentation that each radiation machine has been evaluated in accordance with
941 these regulations, or other state regulations which are equivalent; and that
- 942 (a) The machines comply with the manufacturer's required specifications;
- 943 (b) The evaluations are current, having been performed within one year prior to
944 entry into the State as required in 2.5; and
- 945 (5) In the case of mammography-related functions, a copy of the mammography
946 certificate issued by the FDA, applicable American College of Radiology
947 credentials, quality control records, personnel records, and the most recent
948 medical physicist survey.
- 949 2.8.2 Based upon an application that includes documentation of why it is not possible or is an undue
950 hardship to provide fifteen (15) calendar days notice, the Department may:
- 951 2.8.2.1 Grant permission to proceed sooner; or
- 952 2.8.2.2 Waive the requirement for filing additional written notifications during the remainder of the
953 calendar year following the receipt of the initial notification from a person engaging in
954 activities pursuant to 2.8.1.
- 955 2.8.3 While in the State of Colorado, all radiation machines are subject to inspection and may be
956 required to be inspected and/or certified by a qualified inspector who is registered with the
957 Department.
- 958 2.8.4 The out-of-state registrant shall notify the Department within one hour after arrival at the actual
959 work location within the State and shall notify the Department within one hour after any change of
960 work location within the State.

DRAFT 2 05/13/2014

961 2.8.5 If multiple individuals work concurrently at more than one work location under an approval granted
 962 pursuant to 2.8.1, each day worked per location shall be counted separately toward the limit of
 963 180 cumulative total days per calendar year.

964 2.8.6 The Department may revoke, limit, or qualify its approval for the use of radiation machines in the
 965 State upon determining that the approval was based on false or misleading information submitted
 966 to the Department or that such action is necessary in order to prevent undue hazard to public
 967 health and safety or property.

968 2.8.7 Each person operating a radiation machine within the State under reciprocity in areas of exclusive
 969 federal jurisdiction shall comply with the applicable federal requirements.

970 ENFORCEMENT**971 2.9 Department Review of Performance.**

972 2.9.1 The Department as appropriate shall:

Comment [BNV43]: Changes to this section made at the request of the State Attorney Generals Office.

973 2.9.1.1 Notify the registrant **or person operating a radiation machine, as appropriate,**
 974 regarding inadequate action on any item of violation;

975 2.9.1.2 Determine a schedule for correction of each violation, ~~and~~ specifying a date by which
 976 compliance must be achieved;

977 2.9.1.3 Confirm and verify by inspection a ~~registrant's~~ corrective action ~~(e)~~ **by a registrant or**
 978 **person operating a radiation machine, as appropriate,** to assure compliance with
 979 these regulations; and ~~for~~

980 2.9.1.4 Assess a non-routine inspection fee provided in Part 12, at the programmatic hourly rate,
 981 for the inspection of a radiation machine system or facility, if:

982 (1) The registrant **or person operating a radiation machine, as appropriate,** fails to
 983 fulfill the requirements ~~in 2.5.4 of these Regulations;~~ or

984 (2) Any item of violation has not been corrected in accordance with the compliance
 985 schedule established in 2.9.1.2.

986 2.9.2 The Department shall periodically review and audit:

987 2.9.2.1 The ~~adequacy of servicing and services of each registrant, for example, on a frequency~~
 988 ~~consistent consonant with the type of radiation machine, as in 2.5.1.2~~ **compliance of any**
 989 **person registered under 2.4 with these Regulations;**

990 2.9.2.2 The competency of each service technician in meeting standards and requirements for
 991 adequate service company performance;

992 2.9.2.3 The performance of each qualified inspector, in particular:

993 (1) Adequacy of inspections;

994 (2) Competency in determining radiation machine system or facility compliance with
 995 these regulations; and

996 (3) Completeness and accuracy of findings on Form R-59-1 or R-59-2;

997 2.9.2.4 The performance of each qualified expert and/or registered medical physicist, in
 998 particular:

999 (1) Adequacy of shielding ~~evaluations~~ **design reports;** and

DRAFT 2 05/13/2014

- 1000 (2) Competency in performing activities in accordance with these regulations.
- 1001 2.9.3 The Department shall notify the registrant of any failure to meet a performance standard or
1002 requirement of the regulations that is identified as a result of the review or audit.
- 1003 2.9.4 The Department shall determine a schedule for actions required, specifying the date by which
1004 adequacy or competency shall be demonstrated.
- 1005 2.9.5 For any failure to demonstrate adequacy or competency in accordance with the compliance
1006 schedule established in 2.9.4, the Department will assess a non-routine inspection fee at the
1007 programmatic hourly rate for Department effort to enforce compliance with a performance
1008 standard or requirement of the regulations.
- 1009 2.9.6 The Department may deny, withdraw, limit or qualify its approval of any person to perform activities
1010 upon determining that such action is necessary in order to prevent undue hazard to health and
1011 safety, or for other reasonable cause.
- 1012 2.9.7 A registrant that fails to comply with these regulations including 2.4.5 and 2.4.6 shall be subject to
1013 revocation as provided in 2.10.

1014 MODIFICATION AND REVOCATION OF REGISTRATION

- 1015 2.10 The terms and conditions of all registrations/certificates shall be subject to amendment, revision, or
1016 modification or the registration/certificate may be suspended or revoked by reason of
1017 amendments to the Act, or by reason of rules, regulations, and orders issued by the Department.

1018 **PART 2, APPENDIX 2A: RADIATION MACHINE RADIATION SAFETY OFFICER (RSO) ADEQUATE**
1019 **RADIATION SAFETY TRAINING AND EXPERIENCE**

1020 **Each individual who performs the duties of a Radiation Safety Officer for a facility using radiation**
1021 **machines shall meet the following education and experience requirements:**

1022 **2A.1 For non-healing arts facilities (such as those governed by Part 8, "Radiation Safety**
1023 **Requirements for Radiation Generating Machines Not Used in the Healing Arts" , and Part 9,**
1024 **"Radiation Safety Requirements for Particle Accelerators Not Used in the Healing Arts"):**

1025 **2A.1.1 Has current Department approval as a Qualified Expert, or**

1026 **2A.1.2 Has current Department approval as a registered medical physicist, or**

1027 **2A.1.2 Has satisfactorily completed a baccalaureate or higher degree in natural or physical**
1028 **science, health physics, radiological sciences, nuclear medicine, nuclear engineering, or**

1029 **2A.1.3 Has completed a structured educational program that included classroom training**
1030 **in the responsibilities of an RSO, including but not limited to:**

1031 **2A.1.3.1 Establishing and overseeing operating and safety procedures that**
1032 **maintain radiation exposures as low as reasonably achievable (ALARA), and to**
1033 **review them regularly to ensure that the procedures are current and conform with**
1034 **these regulations;**

1035 **2A.1.3.2 Ensuring that individual monitoring devices are properly used by**
1036 **occupationally exposed personnel, that records are kept of the monitoring results,**
1037 **and that timely notifications are made as required by Part 4;**

1038 **2A.1.3.3 Investigating and reporting to the agency each known or suspected case**
1039 **of radiation exposure to an individual or radiation level detected in excess of limits**
1040 **established by these regulations and each theft or loss of source(s) of radiation,**
1041 **determining the cause, and taking steps to prevent its recurrence;**

Comment [JJ44]: This revised language replaces the existing language of Appendix 2A in its entirety, due to the more extensive revision of language and format for this appendix.

DRAFT 2 05/13/2014

1052 2A.1.3.4 Having a thorough knowledge of management policies and administrative
1053 procedures of the registrant and keeping management informed on a periodic basis
1054 of the performance of the registrant's radiation protection program, if applicable;

1055
1056 2A.1.3.5 Assuming control and having the authority to institute corrective actions
1057 including shutdown of operations when necessary in emergency situations or
1058 unsafe conditions;

1059
1060 2A.1.3.6 Maintaining records as required by these regulations; and

1061
1062 2A.1.3.7 Ensuring that personnel are adequately trained and complying with these
1063 regulations, the conditions of the certificate of registration, and the operating and
1064 safety procedures of the registrant; or

1065
1066 2A.2 For a healing arts facility not using fluoroscopy, computed tomography, or radiation therapy
1067 machines, unless otherwise provided or prohibited by these regulations:

1068 2A.2.1 Has department approval as a registered medical physicist; or

1069
1070 2A.2.2 Is a physician, chiropractor, dentist, podiatrist or veterinarian with a current active
1071 license from the appropriate State of Colorado professional licensure board and is
1072 performing RSO duties within their scope of practice;

1073 (1) For dental facilities using a Volumetric Dental Imaging System, a dentist with a
1074 current active license from the Colorado Board of Dental Examiners may perform
1075 the duties of a Radiation Safety Officer;

1076 or

1077
1078 2A.2.3 Meets the applicable operator requirements of 2.6.1.3 through 2.6.1.14; and has
1079 completed a structured educational program that includes ionizing radiation safety; or

1080
1081 2A.3 For a healing arts facility using fluoroscopic or computed tomography machines, unless
1082 otherwise provided or prohibited by these regulations:

1083 2A.3.1 Has department approval as a registered medical physicist; or

1084
1085 2A.3.2 Is a physician or veterinarian who has a current active license from the appropriate
1086 State of Colorado professional licensure board; or

1087
1088 2A.4 For a healing arts facility using radiation therapy machines, unless otherwise provided or
1089 prohibited by these regulations:

1090 2A.4.1 Has department approval as a radiation therapy registered medical physicist, or

1091
1092 2A.4.2 Is a physician or veterinarian who has a current active license from the appropriate
1093 State of Colorado professional licensure board and is performing RSO duties within their
1094 scope of practice, or

1095 2A.5 Has prior Department approval pursuant to another part of these regulations as an
1096 authorized RSO

1097 ~~PART 2, APPENDIX 2A: RADIATION MACHINE RADIATION SAFETY OFFICER (RSO) ADEQUATE~~
1098 ~~RADIATION SAFETY TRAINING AND EXPERIENCE~~

1099 ~~The applicant, licensee, or registrant shall require each individual assigned to fulfill responsibilities as~~
1100 ~~Radiation Safety Officer (RSO) to be an individual who:~~

1101 ~~2A.1 Has provided evidence of current credentials acceptable to the Department that demonstrate~~
1102 ~~training and experience in the safe and effective use of radiation machines and the potential~~
1103 ~~radiation hazards and emergency precautions applicable to the type(s) of activity or facility for~~
1104 ~~which the individual is seeking to perform RSO duties, to include:~~

1105 ~~2A.1.1 For any healing arts facility, approval by the Department as a registered medical physicist~~
1106 ~~(RMP), provided in addition that the RMP has:~~

Comment [BNV45]: Clarifying provision added based on stakeholder comments.

DRAFT 2 05/13/2014

- 1107 2A.1.1.1 For radiation therapy, as provided by 2.4.3.2 and Part 6, current registration as
1108 a QE(T);
- 1109 2A.1.1.2 For computed tomography, as provided by Part 6, current registration as either
1110 a QE(R) or QE(T); or
- 1111 2A.1.2 For non-healing arts facilities (such as those governed by Part 8, "Radiation Safety
1112 Requirements for Radiation Generating Machines Not Used in the Healing Arts", and
1113 Part 9, "Radiation Safety Requirements for Particle Accelerators Not Used in the Healing
1114 Arts"), has current Department approval as a QE(R), QE(S), QE(T) or as having
1115 satisfactorily completed:
- 1116 2A.1.2.1 A baccalaureate or higher degree in natural or physical science, health physics,
1117 radiological sciences, nuclear medicine, nuclear engineering, or other structured
1118 educational program that included classroom training in the responsibilities of an
1119 RSO, including but not limited to:
- 1120 (1) Establishing and overseeing operating and safety procedures that maintain
1121 radiation exposures as low as reasonably achievable (ALARA), and to
1122 review them regularly to ensure that the procedures are current and
1123 conform with these regulations;
- 1124 (2) Ensuring that individual monitoring devices are properly used by
1125 occupationally exposed personnel, that records are kept of the
1126 monitoring results, and that timely notifications are made as required by
1127 Part 3;
- 1128 (3) Investigating and reporting to the agency each known or suspected case of
1129 radiation exposure to an individual or radiation level detected in excess
1130 of limits established by these regulations and each theft or loss of
1131 source(s) of radiation, determining the cause, and taking steps to prevent
1132 its recurrence;
- 1133 (4) Having a thorough knowledge of management policies and administrative
1134 procedures of the registrant and keeping management informed on a
1135 periodic basis of the performance of the registrant's radiation protection
1136 program, if applicable;
- 1137 (5) Assuming control and having the authority to institute corrective actions
1138 including shutdown of operations when necessary in emergency
1139 situations or unsafe conditions;
- 1140 (6) Maintaining records as required by these regulations; and
- 1141 (7) Ensuring that personnel are adequately trained and complying with these
1142 regulations, the conditions of the certificate of registration, and the
1143 operating and safety procedures of the registrant; and
- 1144 2A.1.2.2 Experiential training in radiation safety for the assigned type(s) of activity or
1145 facility, including emergency procedures and how to appropriately apply radiation
1146 regulations; or
- 1147 2A.1.3 For a healing arts facility other than for radiation therapy or computed tomography, unless
1148 otherwise provided or prohibited by these regulations:
- 1149 2A.1.3.1 Meets the applicable operator requirements of 2.6.1.2 through 2.6.1.14; and
- 1150 2A.1.3.2 Has completed a structured educational program that includes ionizing radiation
1151 safety, for example, radiological sciences training as part of a professional
1152 course of study or a 40-hour radiation safety course; and

DRAFT 2 05/13/2014

1153 ~~2A.1.3.3 Has completed at least two years of applicable supervised use of radiation~~
1154 ~~machines; or~~

1155 ~~2A.1.4 For a healing arts facility other than for radiation therapy or computed tomography, or for~~
1156 ~~a non-healing arts facility (such as those governed by Part 8, "Radiation Safety~~
1157 ~~Requirements for Radiation Generating Machines Not Used in the Healing Arts", and~~
1158 ~~Part 9, "Radiation Safety Requirements for Particle Accelerators Not Used in the Healing~~
1159 ~~Arts"), has:~~

1160 ~~2A.1.4.1 Prior Department approval pursuant to another part of these regulations as an~~
1161 ~~authorized RSO; and~~

1162 ~~2A.1.4.2 Sufficient radiation safety experience, for example, as a qualified radiation~~
1163 ~~machine operator (at least two years unless otherwise approved by the~~
1164 ~~Department), commensurate with the type(s) of activity or facility for which the~~
1165 ~~individual is seeking to perform RSO duties as, or under the supervision of, a~~
1166 ~~certified health physicist, certified medical physicist, experienced RSO, or~~
1167 ~~radiation protection professional recognized by the Department;~~
1168 ~~2A.2 And has also complied with each additional requirement applicable to the assigned type(s) of activity or~~
1169 ~~facility that pertains to qualification or duties of a radiation safety officer under any other part of these regulations.~~

DRAFT 2 05/13/2014

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PART 2, APPENDIX 2B: REGISTERED MEDICAL PHYSICIST, QE(R) AND QE(T) ADEQUATE RADIATION SAFETY TRAINING AND EXPERIENCE

Comment [BNV46]: Appendix revised to improve flow and add clarity to the specific requirements for the various QE and RMP categories.
Certain changes/clarifications were made based on stakeholder feedback received during the comment period.

1174
1175

2B.1 Each Registered Medical Physicist for a healing arts facility other than those using radiation therapy machines shall be an individual who meets the requirements of 2I.3.

1176
1177

2B.2 Each Registered Medical Physicist for a healing arts facility using radiation therapy machines regulated by Part 24 shall be an individual who meets the requirements of 2I.5.

1178
1179
1180
1181

2B.3 Each Qualified Expert who designs or evaluates shielding for a radiation machine used in the healing arts as regulated by Part 6, but not used in radiation therapy, and is designated as a QE(R), or each Qualified Expert who designs or evaluates shielding for a radiation machine used in radiation therapy, and is designated as a QE(T) shall:

1182

2B.3.1 Have current certification in health physics or a subfield of medical physics by:

1183

2B.3.1.1 The American Board of Medical Physics; or

1184

2B.3.1.2 The American Board of Health Physics; or

1185

2B.3.1.3 The Canadian College of Medical Physics; or

1186

2B.3.1.4 The American Board of Radiology in a radiological physics category; or

1187

2B.1.3.5 American Board of Nuclear Medicine Science; or

1188
1189

2B.3.2 Has current certification in an equivalent specialty board recognized by the Department, and;

1190

2B.3.2.1 Has provided written documentation that the individual:

1191
1192
1193

(1) Holds a master or doctorate degree from an accredited college or university in physics, biophysics, radiological physics, health physics, or medical physics; and

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1196
1197

(2) Has satisfactorily completed 2 years of training and work experience acceptable to the Department that includes one year of documented, full-time training in the appropriate field under the supervision of a qualified expert.

1198

~~Each registered medical physicist shall be an individual who of this Appendix.:~~

1199

~~2B.1 Registered Medical Physicists shall~~Has provided evidence of:

1200

~~2B.1.1 Current certification in a subfield of medical physics by:~~

1201

~~2B.1.1.1 The American Board of Medical Physics; or~~

1202

~~2B.1.1.2 The American Board of Health Physics; or~~

1203

~~2B.1.1.3 The Canadian College of Medical Physics; or~~

1204

~~2B.1.1.4 The American Board of Radiology in a radiological physics category; or~~

1205

~~2B.1.1.5 American Board of Nuclear Medicine Science; or~~

DRAFT 2 05/13/2014

- 1206 ~~2B.1.1.6 A recognized equivalent specialty board;~~
- 1207 ~~and~~
- 1208 ~~2B.1.2 Written approval from the Department to design shielding or conduct specified medical physics~~
1209 ~~activities as a qualified expert for:~~
- 1210 ~~2B.1.2.1 Radiography other than radiotherapy, designated QE(R), having met the applicable criteria in~~
1211 ~~AAPM Report No. 42, "The Role of the Clinical Medical Physicist in Diagnostic Radiology"~~
1212 ~~(January 1994), in particular page 12; or~~
- 1213 ~~2B.1.2.2 Radiation therapy, designated QE(T), with training and experience in the clinical applications of~~
1214 ~~radiation physics to radiation therapy, having met the applicable criteria in AAPM Report No. 38,~~
1215 ~~"The Role of a Physicist in Radiation Oncology" (1993), in particular page 7.~~
- 1216 ~~Or~~
- 1217 ~~2B.2 Or, as an alternative to fully satisfying 2B.1, is approved by the Department as a provisional~~
1218 ~~registered medical physicist to assist a registered medical physicist with assigned activities of~~
1219 ~~specified duration, having provided to the Department:~~
- 1220 ~~2B.2.1 An application that includes the name and signature of each registered medical physicist for~~
1221 ~~whom the applicant will be working under supervision; and~~
- 1222 ~~2B.2.2 Evidence that all training and experience requirements are met to become certified as prescribed~~
1223 ~~by 2B.1.1, but full certification has not yet been received.~~
- 1224

DRAFT 2 05/13/2014

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1227 **PART 2, APPENDIX 2C: QUALIFIED EXPERT FOR SHIELDING DESIGN FOR OTHER THAN A**
 1228 **HEALING ARTS FACILITY—QE(S) – ADEQUATE RADIATION SAFETY TRAINING AND**
 1229 **EXPERIENCE**

Comment [BNV47]: Appendix revised to improve flow and add clarity to the specific requirements for the various QE and RMP categories.

Certain changes/clarifications were made based on stakeholder feedback received during the comment period.

1230 **2C.1 Each Qualified Expert who designs or evaluates shielding for a radiation machine not used in**
 1231 **the healing arts, designated as QE(S), shall:**

1232 **2C.1 Have current certification in health physics or a subfield of medical physics by:**

1233 **2C.1.1 The American Board of Medical Physics; or**

1234 **2C.1.2 The American Board of Health Physics; or**

1235 **2C.1.3 The Canadian College of Medical Physics; or**

1236 **2C.1.4 The American Board of Radiology in a radiological physics category; or**

1237 **2C.1.5 American Board of Nuclear Medicine Science; or**

1238 **2C.2 Has current certification in an equivalent specialty board recognized by the**
 1239 **Department, and;**

1240 **2C.2.1 Has provided written documentation that the individual:**

1241 **2C.2.1.1 Holds a master or doctorate degree from an accredited college or**
 1242 **university in physics, biophysics, radiological physics, health physics, or**
 1243 **medical physics; and**

1244 **2C.2.1.2 Has satisfactorily completed 2 years of training and work**
 1245 **experience acceptable to the Department that includes one year of**
 1246 **documented, full-time training in the appropriate field under the**
 1247 **supervision of a qualified expert;**

1248 ~~As provided by 2.4.3.1(2), each qualified expert for shielding design (other than a registered medical~~
 1249 ~~physicist) shall be an individual who:~~

1250 ~~2C.1 Has provided evidence of:~~

1251 ~~2C.1.1 Current certification by a physics specialty board recognized by the Department; and~~

1252 ~~2C.1.2 Written approval from the Department as a qualified expert for shielding design,~~
 1253 ~~designated QE(S);~~

1254 **Or**

1255 ~~2C.2 Or, h~~**Has provided written documentation that the individual:**

1256 ~~2C.2.1 Holds a master or doctorate degree from an accredited college or university in physics,~~
 1257 ~~biophysics, radiological physics, health physics, or medical physics; and~~

1258 ~~2C.2.2 Has satisfactorily completed 2 years of training and work experience acceptable to the~~
 1259 ~~Department that includes:~~

1260 ~~2C.2.2.1 One year of documented, full-time training in the appropriate field;~~

DRAFT 2 05/13/2014

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1274 **PART 2, APPENDIX 2D: X-RAY SYSTEM OPERATOR ADEQUATE RADIATION SAFETY TRAINING**
 1275 **AND EXPERIENCE, INCLUDING LIMITED SCOPE X RAY MACHINE OPERATOR (LSO)**

1276 ~~The registrant shall require each x-ray system operator to be an individual at least 18 years of age~~
 1277 ~~who~~ **Each operator of a radiation machine used for healing arts purposes on living humans other**
 1278 **than in dentistry, chiropractic or podiatry, shall meet the following education and experience**
 1279 **requirements:**

1280 2D.1 Is certified or registered by:

1281 2D.1.1 The American Registry of Radiologic Technologists **as a Radiologic Technologist**; or

1282 2D.1.2 A specialty board **determined by the department to have substantially equivalent**
 1283 **requirements for certification as the American Registry of Radiologic**
 1284 **Technologists, that has been recognized by the Department, including or in combination**
 1285 **with documentation accepted by the Department of the training required by 2D.2A**
 1286 **through 2D.2F;**

1287 **Or**

1288 2D.2 ~~Or, is accepted~~ **Is certified** by the Department as a State of Colorado-registered limited scope **x**
 1289 **ray machine operator to conduct specified radiographic examinations of the chest, extremities,**
 1290 **skull, hip/pelvis and spine/sacrum, to conduct only those radiographic examinations**
 1291 **specified in Section 2.6.1.4 and;** having satisfactorily completed:

1292 ~~[Elements of the following are from the 2009 Content Specifications for the Examination~~
 1293 ~~for the Limited Scope of Practice in Radiology I and used with ARRT permission.]~~

1294 2D.2.1 At least 80 hours of didactic training providing the minimum hours of instruction in the
 1295 specific subjects listed in 2D.2.A-1.1 through 2D.2.F1.6:

1296 **RADIATION SAFETY (passing score on written test of 75% or higher on the radiation**
 1297 **safety module)**

1298 2D.2.1.A-1 Basic X-Ray Physics—20 hours

1299 (1) Structure of matter and the atom

1300 (2) General description of production of x-rays

1301 (3) X-ray emission, quantity and quality

1302 (4) Function of filtration and effects it has on x-ray beam collimation

1303 (5) Types of function of beam limiting devices

1304 (6) Design, features and functions of x-ray tubes

1305 (7) Circuitry of the x-ray machine

1306 2D.2.1.B-2 Radiobiology—3 hours

1307 (1) Effects of ionizing radiation on the human body

1308 (2) Molecular and cellular radiobiology

Comment [BNV48]: The revised language clarifies that it is the responsibility of the radiation machine operator to meet the appropriate education and experience requirements.

Section 2.6.1 states facility responsibilities.

Comment [BNV49]: The limitations for an LSO are covered in 2.6.1.4 and therefore are deleted here.

Comment [BNV50]: This requirement has been relocated to 2D.2.4 for consistency.

DRAFT 2 05/13/2014

- 1309 (3) Factors that cause somatic and genetic damage
- 1310 | 2D.2.1.C-3 Radiation Protection—6 hours
- 1311 (1) ALARA
- 1312 (2) Shielding materials
- 1313 (3) Radiation quantity and units of measurement
- 1314 (4) Basic interactions of x-rays with matter
- 1315 (5) Primary and secondary scatter
- 1316 (6) Importance of time, distance, shielding
- 1317 (7) Maximum permissible doses: occupational and public
- 1318 (8) Patient protection
- 1319 | ~~RADIOGRAPHIC PROCEDURES (passing score on written test of 75% or higher on~~
1320 ~~radiographic procedures module~~
- 1321 | 2D.2.1.D4. Principles of Exposure—15 hours
- 1322 (1) Factors that control and influence radiographic quality
- 1323 (2) Properties of x-rays
- 1324 (3) Size distortion
- 1325 (4) Shape distortion
- 1326 (5) kVp, mAs, time
- 1327 (6) AEC and manual
- 1328 (7) Grids
- 1329 (8) Collimation
- 1330 (9) Intensifying screens
- 1331 (10) X-ray films and holders
- 1332 (11) Artifacts
- 1333 (12) Inverse square law
- 1334 | 2D.2.1.E-5 Procedures and Processing—4 hours
- 1335 (1) Film storage and handling
- 1336 (2) Manual, automatic processing film processing and troubleshooting
- 1337 (3) Computed Radiography (CR)
- 1338 (4) Digital Radiography (DR)

DRAFT 2 05/13/2014

- 1339 (5) PACs
- 1340 (6) Quality assurance / quality control
- 1341 2D.2.1.F-6 Anatomy and Positioning—32 hours
- 1342 (1) Chest—4 hours
- 1343 (2) Extremity—12 hours
- 1344 (3) Spine—8 hours
- 1345 (4) Skull—8 hours; and
- 1346 and
- 1347 2D.2.2 At least 480 hours of clinical training during which time the individual may perform x-ray
1348 examinations only under personal (in-attendance during the procedure) supervision of a
1349 qualified trainer, including:
- 1350 2D.2.2.1 At least 320 hours experiential training at a clinic; and
- 1351 2D.2.2.2 No more than 160 hours of laboratory training (exclusive of the didactic hours
1352 required by 2D.2A-2.1.1 through 2D.2F2.1.6); and
- 1353 and
- 1354 2D.2.3 Performance of the following imaging procedures (at least 80 examinations in total, with
1355 record of each examination kept on file):
- 1356 2D.2.3.1 Ribs—4 examinations;
- 1357 2D.2.3.2 Hand—4 examinations;
- 1358 2D.2.3.3 Wrist—4 examinations;
- 1359 2D.2.3.4 Forearm—4 examinations;
- 1360 2D.2.3.5 Elbow—4 examinations;
- 1361 2D.2.3.6 Humerus—4 examinations;
- 1362 2D.2.3.7 Shoulder—4 examinations;
- 1363 2D.2.3.8 Clavicle—4 examinations;
- 1364 2D.2.3.9 Femur—4 examinations;
- 1365 2D.2.3.10 Tibia – Fibula—4 examinations;
- 1366 2D.2.3.11 Ankle—4 examinations;
- 1367 2D.2.3.12 Foot—4 examinations;
- 1368 2D.2.3.13 Sinuses—4 examinations;
- 1369 2D.2.3.14 Skull—4 examinations;
- 1370 2D.2.3.15 Facial Bones—4 examinations;

DRAFT 2 05/13/2014

- 1371 2D.2.3.16 C-Spine—4 examinations;
- 1372 2D.2.3.17 Thoracic Spine—4 examinations;
- 1373 2D.2.3.18 Lumbar Spine—4 examinations;
- 1374 2D.2.3.19 Chest—4 examinations;
- 1375 2D.2.3.20 Hip / Pelvis—4 examinations; and
- 1376 and
- 1377 2D.2.4 Approval by the Department as having passed the ARRT Limited Scope Operator State
1378 Examination required by 2.4.5.1A passing score on the American Registry of
1379 Radiologic Technologists (ARRT) examination for the Limited Scope of Practice in
1380 Radiography. A passing score is:
- 1381 **2D.2.4.1 A score of at least 75% correct on the Core Module, and**
- 1382 **2D.2.4.2 An average score of at least 75% correct on the Radiographic**
1383 **Procedures Modules for Chest, Extremities, Skull/Sinuses, and Spine.**
- 1384 ~~2D.2.4.1 The application to be registered in the State of Colorado as a Limited Scope~~
1385 ~~Operator shall be submitted on the appropriate Department form(s) and shall~~
1386 ~~contain all information required by the Department as indicated on the form(s)~~
1387 ~~and all accompanying instructions.~~
- 1388 (1) ~~The applicant shall complete Form R-70, "Application for Registration—~~
1389 ~~Limited Scope Operator" and shall attach form R-71.~~
- 1390 (2) ~~The applicant shall verify didactic training and clinical experience on Form R-~~
1391 ~~71, "Clinical Supervisory and Competency Statement—Limited Scope~~
1392 ~~Operator."~~
- 1393 ~~2D.2.4.2 The application shall be accompanied by the required fee(s).~~
- 1394 ~~2D.2.4.3 Application to take the ARRT LSO examination shall be made within one year~~
1395 ~~upon completion of the requirements of 2D.2.1 and within ninety (90) calendar~~
1396 ~~days upon completion of the requirements of 2D.2.2 and/or 2.D.2.3.~~
- 1397 ~~2D.2.4.4 Upon being contacted by ARRT to schedule the LSO examination, the~~
1398 ~~applicant shall complete the Core Module and at least the Radiographic~~
1399 ~~Procedure Modules for Chest, Extremities, Skull/Sinuses and Spine within ninety~~
1400 ~~(90) calendar days.~~
- 1401 ~~2D.2.4.5 The Department will notify the applicant of ARRT LSO examination result upon~~
1402 ~~receipt by the Department.~~
- 1403 ~~2D.3-2.5~~ **And, H** has maintained a minimum of twenty-four (24) hours of continuing education every two
1404 years in the areas of radiology, radiation safety, radiography and similar fields. This education
1405 shall:
- 1406 ~~2D.3-2.5.1~~ Conform to guidelines equivalent to the ~~August 1, 2008~~ **most current revision of**
1407 **the ARRT Continuing Education Requirements for Renewal of Registration ; and**
1408 ~~2D.3.2 Be documented by certificate(s) or other attestation(s) of satisfactory completion, submitted with an updated~~
1409 ~~form R-90, "Application For Renewal— Limited Scope Operator"~~
- 1410

Comment [JJ51]: This requirements of this section are addressed in other Parts of the Appendix or main body of the rule.

DRAFT 2 05/13/2014

1411 PART 2, APPENDIX 2E: COMPUTED TOMOGRAPHY (CT) ADEQUATE RADIATION SAFETY
 1412 TRAINING AND EXPERIENCE

1413 ~~The registrant shall require each computed tomography operator to be an individual at least 18 years of~~
 1414 ~~age who~~ **Each operator of a computed tomography system shall meet the following experience and**
 1415 **education requirements:**

1416 2E.1 Is certified:

1417 2E.1.1 As ARRT(R) and also certified in computed tomography by ARRT; ~~or~~

1418 or

1419 2E.1.2 As ARRT(N) or ARRT(T);

1420 or

1421 2E.1.3 As CNMT by the Nuclear Medicine ~~Technologist-Technology~~ Certification Board; ~~or~~

1422 or

1423 2E.1.4 By a specialty board **determined by the department to have substantially equivalent**
 1424 **requirements for certification in computed tomography as the American Registry**
 1425 **of Radiologic Technologists.** ~~that has been recognized by the Department, including or~~
 1426 ~~in combination with documentation accepted by the Department for the training required~~
 1427 ~~by 2E.2A through 2E.2L;~~

1428 or

1429 2E.2 ~~Is~~ **Prior to July 30, 2015, is certified as** ARRT(R) and also has satisfactorily completed:

1430 ~~[Elements of the following are from the July 2008 Content Specifications for the~~
 1431 ~~Examination in Computed Tomography and used with ARRT permission.]~~

1432 2E.2.1 At least 60 hours of didactic training providing the minimum hours of instruction in the
 1433 specific subjects listed in ~~2E.2A~~ **2E.2.1.1** through ~~2E.2L~~ **2E.2.1.12**:

1434 ~~2E.2A~~ **2E.2.1.1** Intravascular (IV) Procedures—2 hours

1435 (1) Venipuncture

1436 (a) Site selection

1437 (b) Aseptic and sterile techniques

1438 (2) Injection techniques

1439 (a) Manual

1440 (b) Automatic

1441 (i) Single phase

1442 (ii) Multi-phase

1443 (iii) Flow rate

1444 ~~2E.2B~~ **2E.2.1.2** Contrast Agent—6 hours

Comment [BNV52]: The Department registration pathway for approval to operate a CT will no longer be available after July 30, 2015.

The department has determined that the nationally recognized registry process provided by the ARRT (or equivalent) is necessary to prove competence for the safe use of CT's.

DRAFT 2 05/13/2014

- 1445 (1) Types
- 1446 (a) Ionic
- 1447 (b) Non-ionic
- 1448 (c) Water soluble
- 1449 (d) Air
- 1450 (e) Water
- 1451 (2) Administration route and dose calculations
- 1452 (a) IV (angiocatheter or butterfly)
- 1453 (b) Oral
- 1454 (c) Rectal
- 1455 (d) Intrathecal
- 1456 (e) Catheters
- 1457 (3) Special considerations
- 1458 (a) Allergy preparation
- 1459 (b) Pathologic processes
- 1460 (c) Contraindications
- 1461 (d) Indicators
- 1462 (4) Adverse reactions
- 1463 (a) Recognition and assessment of symptoms
- 1464 (b) Treatment (e.g., compresses, medications)
- 1465 (c) Documentations
- 1466 ~~2E.2G~~ **2E.2.1.3** Radiation Safety and Dosimetry—6 hours
- 1467 (1) Technical factors affecting patient dose
- 1468 (2) Radiation protection
- 1469 (3) Dose Measurement
- 1470 (4) Pediatric dose reduction
- 1471 ~~2E.2D~~ **2E.2.1.4** Type of Study (24 hours; 1 hour for each topic—~~2E.2E, 2E.2F, 2E.2G~~
- 1472 ~~and 2E.2H—~~for each type of study)
- 1473 (1) Head
- 1474 (2) Neck

DRAFT 2 05/13/2014

- 1475 (3) Chest
- 1476 (4) Abdomen
- 1477 (5) Pelvis
- 1478 (6) Musculo-skeletal
- 1479 ~~2E.2E~~**2E.2.1.5**. Sectional Anatomy (for each type of study **listed in 2E.2.1.4**)
- 1480 (1) Sagittal plane
- 1481 (2) Transverse plane (axial)
- 1482 (3) Coronal plane
- 1483 (4) Off-axis (oblique)
- 1484 (5) Landmarks
- 1485 (6) Pathology recognition
- 1486 ~~2E.2F~~**2E.2.1.6** Contrast Media (for each type of study **listed in 2E.2.1.4**)
- 1487 (1) Types of agents
- 1488 (2) Indications
- 1489 (3) Contraindications
- 1490 (4) Dose calculation
- 1491 (5) Administration route
- 1492 (6) Scan/prep delay
- 1493 ~~2E.2G~~**2E.2.1.7** Scanning Procedures (for each type of study **listed in 2E.2.1.4**)
- 1494 (1) Positioning
- 1495 (2) Scout
- 1496 (3) Acquisition methods (e.g., spiral, non spiral, dynamic, multi-row detector)
- 1497 (4) Parameter selection (e.g., slice thickness, mA, time, algorithm, pitch)
- 1498 (5) Protocol modification for pathology or trauma
- 1499 (6) Cardiac gating
- 1500 ~~2E.2H~~**2E.2.1.8** Special Procedures (for each type of study **listed in 2E.2.1.4**)
- 1501 (1) 3-D studies
- 1502 (2) Biopsies
- 1503 (3) Radiation therapy planning
- 1504 (4) Drainage and aspiration

DRAFT 2 05/13/2014

- 1505 (5) Post-myelography
- 1506 (6) CT arthrography and angiography
- 1507 (7) Cardiac gating
- 1508 ~~2E.2.1~~**2E.2.1.9** Systems Operation and Components—4 hours
- 1509 (1) Tube
- 1510 (2) Generator and transformers
- 1511 (3) Detector configuration
- 1512 (4) Data Acquisition Systems (DAS)
- 1513 (5) Collimation
- 1514 (6) Computer and array processor
- 1515 (7) Equipment maintenance
- 1516 ~~2E.2.1~~**2E.2.1.10** Image Processing & Display—10 hours
- 1517 (1) Image reconstruction
- 1518 (a) Filtered back projection reconstruction
- 1519 (b) Reconstruction filters (algorithms)
- 1520 (c) Raw data vs. image data
- 1521 (d) Prospective / retrospective reconstruction (single and multi-row)
- 1522 (e) Effective slice thickness
- 1523 (f) Reconstruction interval
- 1524 (2) Image display
- 1525 (a) Pixel, voxel
- 1526 (b) Matrix
- 1527 (c) Image magnification
- 1528 (d) Field of view (scan, reconstruction and display)
- 1529 (e) Attenuation coefficient
- 1530 (f) Window level, window width
- 1531 (g) Plane specification (X, Y, Z coordinates)
- 1532 (h) Cine
- 1533 (i) ROI (single and multiple image)
- 1534 (3) Post-processing

DRAFT 2 05/13/2014

- 1535 (a) Multiplanar reformation
- 1536 (b) 3-dimensional rendering (MIP, SSD, VR)
- 1537 (c) Quantitative measurements (volume, distance, diameter)
- 1538 (4) Data management
- 1539 (a) Hard/soft copy
- 1540 (b) Storage / archive
- 1541 (c) PACS
- 1542 (d) Security and confidentiality
- 1543 (e) Networking
- 1544 ~~2E.2K~~**2E.2.1.11** Image Quality—4 hours
- 1545 (1) Spatial resolution
- 1546 (2) Contrast resolution
- 1547 (3) Temporal resolution
- 1548 (4) Noise and uniformity
- 1549 (5) Quality assurance procedures
- 1550 (6) CT number
- 1551 (7) Linearity
- 1552 ~~2E.2L~~**2E.2.1.12** Artifact Recognition and Reduction—4 hours
- 1553 (1) Beam hardening
- 1554 (2) Partial volume averaging
- 1555 (3) Motion
- 1556 (4) Metallic
- 1557 (5) Edge gradient
- 1558 (6) Patient positioning
- 1559 (7) Equipment-induced
- 1560 (a) Rings
- 1561 (b) Streaks
- 1562 (c) Tube arcing
- 1563 (d) Cone beam; and

DRAFT 2 05/13/2014

- 1564 2E.2.2 At least 480 hours of clinical training during which time computed tomography
 1565 examinations are performed only under direct supervision of an ARRT(N), ARRT(R),
 1566 ARRT(T) or CNMT computed tomography operator or other qualified trainer.†
- 1567 ~~2E.2.2.1 “Direct supervision” means the supervisor must be present in the facility and~~
 1568 ~~immediately available to furnish assistance and direction throughout the~~
 1569 ~~performance of a procedure. The supervisor is not required to be present in the~~
 1570 ~~room when the procedure is performed.~~
- 1571 ~~2E.2.2.2 A signed statement by the individual(s) who provided supervision and~~
 1572 ~~evaluation shall be kept on file to document dates and locations of clinical~~
 1573 ~~training; and~~
- 1574 2E.2.3 Documented performance under direct supervision of the following imaging procedures
 1575 (at least 60 examinations in total, with record of each examination kept on file):
- 1576 2E.2.3.1 Head—10 examinations;
- 1577 2E.2.3.2 Neck—10 examinations;
- 1578 2E.2.3.3 Chest—10 examinations;
- 1579 2E.2.3.4 Abdomen—10 examinations;
- 1580 2E.2.3.5 Pelvis—10 examinations; and
- 1581 2E.2.3.6 Musculo-skeletal—10 examinations; and
- 1582 ~~2E.2.4 If the option is appropriate, Form R-95, “Application for Registration—Computed~~
 1583 ~~Tomography Machine Operator,” to include all information required by the Department~~
 1584 ~~as indicated on the form and all accompanying instructions, plus payment of any fee.~~
- 1585 ~~2E.3~~**2E.2.4** Or, meeting all requirements of 2E.2.1 and 2E.2.2, is allowed to be a computed
 1586 tomography operator at a facility that performs only the particular procedure(s) for which record(s)
 1587 document prior completion of the full number of examinations required in 2E.2.3;
- 1588 ~~2E.4~~**2E.2.5** Or, having completed didactic training in accord with Section 2E.2.1, is allowed under
 1589 general supervision during the clinical training required by 2E.2.2 to be a computed tomography operator
 1590 only for the particular procedure(s) for which record(s) document prior completion of the full number of
 1591 examinations required in 2E.2.3.
 1592

Comment [BNV53]: This registration requirement is address in 2.4.5.2(2)(b)(i).

DRAFT 2 05/13/2014

1593

1594

1595 **PART 2, APPENDIX 2F: BONE DENSITOMETRY (BD) ADEQUATE RADIATION SAFETY TRAINING**
1596 **AND EXPERIENCE**

1597 ~~The registrant shall require each bone densitometry equipment operator (BDEO) to be an individual at~~
1598 ~~least 18 years of age who:~~ **Each operator of a dual-energy x-ray absorptiometry system used on a**
1599 **living human shall meet the following education and experience requirements:**

1600 2F.1 Is certified or registered by:

1601 2F.1.1 ARRT(R), ARRT(M), ARRT(N), ARRT(T), or CNMT; or

1602 2F.1.2 The International Society for Clinical Densitometry (ISCD), combined with or including the
1603 didactic radiation safety training in 2F.2A, 2F.2B and 2F.2C; or

1604 2F.1.3 A specialty board **determined by the department to have substantially equivalent**
1605 **requirements for certification,** ~~that has been recognized by the Department, in~~
1606 ~~combination with documentation accepted by the Department for the training required by~~
1607 ~~2F.2A through 2F.2I; or~~

1608 **or**

1609

1610 2F.2 ~~Or, it is~~ accepted by the Department as having satisfactorily completed:

1611 ~~[Elements of the following are from the January 2003 Content Specifications for the~~
1612 ~~Bone Densitometry Equipment Operators Examination and used with ARRT permission.]~~

1613 2F.2.1 At least 30 hours of didactic training recognized by the Department that provided the
1614 minimum hours of instruction (as part of, or in addition to, specialty certificate and
1615 equipment operation training) in the specific subjects listed in ~~2F.2A~~ **2F.2.1.1** through
1616 ~~2F.2I~~ **2F.2.1.9**:

1617 **RADIATION SAFETY:**1618 **2F.2.1.1A** Basic X-Ray Physics—2 hours

1619 (1) Structure of matter and the atom

1620 (2) General description of production of x-rays

1621 (3) X-ray emission, quantity and quality

1622 (4) Function of filtration and effects it has on x-ray beam collimation

1623 (5) Types of function of beam limiting devices

1624 (6) Design, features and functions of x-ray tubes

1625 (7) Circuitry of the x-ray machine

1626 **2F.2.1.2B** Radiobiology—2 hours

1627 (1) Effects of ionizing radiation to the human body

DRAFT 2 05/13/2014

- 1628 (2) Molecular and cellular radiobiology
- 1629 (3) Factors that cause somatic and genetic damage
- 1630 2F.2.1.3G Radiation Protection—5 hours
- 1631 (1) ALARA
- 1632 (2) Shielding materials
- 1633 (3) Radiation quantity and units of measurement
- 1634 (4) Basic interactions of x-ray with matter
- 1635 (5) Primary and secondary scatter
- 1636 (6) Importance of time, distance, shielding
- 1637 (7) Maximum permissible dose: occupational and public
- 1638 (8) Patient protection
- 1639 (a) Patient instruction
- 1640 (b) Comparison levels of radiation
- 1641 (i) Natural background radiation
- 1642 (ii) Central DXA
- 1643 (iii) Peripheral DXA
- 1644 ~~BONE DENSITOMETRY PROCEDURES~~
- 1645 2F.2.1.4D Basic Concepts—8 hours
- 1646 (1) Osteoporosis
- 1647 (a) World Health Organization definition and diagnostic criteria
- 1648 (b) Primary vs. secondary
- 1649 (c) Type I (postmenopausal) vs. Type II (senile)
- 1650 (d) Risk factors
- 1651 (i) Controllable (smoking, calcium intake, estrogen, medications)
- 1652 (ii) Uncontrollable (heredity, race, gender, age, medical
- 1653 conditions)
- 1654 (2) Bone physiology
- 1655 (a) Functions of bone
- 1656 (i) Structural support and protection
- 1657 (ii) Storage of essential minerals

DRAFT 2 05/13/2014

- 1658 (b) Types of bone
- 1659 (i) Cortical
- 1660 (ii) Trabecular
- 1661 (c) Bone remodeling cycle
- 1662 (i) Resorption / formation
- 1663 (ii) Osteoblasts/osteoclasts
- 1664 (d) Bone health
- 1665 (i) Nutrition
- 1666 (ii) Exercise
- 1667 (3) BMD testing methods (anatomical sites scanned, key advantages and
- 1668 disadvantages)
- 1669 (a) Dual-energy X-ray Absorptiometry (DXA)
- 1670 (b) Single X-ray Absorptiometry (SXA)
- 1671 (c) Quantitative Ultrasound (QUS)
- 1672 (d) Radiographic Absorptiometry (RA)
- 1673 (4) Measuring BMD
- 1674 (a) Basic statistical concepts
- 1675 (i) Mean
- 1676 (ii) Standard deviation
- 1677 (iii) Coefficient of variation
- 1678 (b) Reporting patient results
- 1679 (i) BMD formula
- 1680 (ii) Z-score
- 1681 (iii) T-score
- 1682 **2F.2.1.5E** Equipment Operation & Quality Control—6 hours
- 1683 (1) Computer console
- 1684 (a) Major components
- 1685 (b) File management
- 1686 (2) Fundamentals of x-ray energy production
- 1687 (a) Properties of x-ray beam: quality (kVp), quantity (mA), duration/time
- 1688 (s)

DRAFT 2 05/13/2014

- 1689 (b) Filters and collimators
- 1690 (c) X-ray energy production: single; dual
- 1691 (3) Types of DXA systems
 - 1692 (a) Pencil beam systems
 - 1693 (b) Fan beam systems
 - 1694 (c) Cone beam systems
- 1695 (4) Quality control
 - 1696 (a) Equipment safety (electrical, pinch points, emergency stop)
 - 1697 (b) Use of phantoms and/or calibration
 - 1698 (c) Troubleshooting
 - 1699 (i) Shift or drift
 - 1700 (ii) Pass / fail
 - 1701 (d) Record maintenance
- 1702 (5) Determining quality in BMD
 - 1703 (a) Precision (definition)
 - 1704 (b) Accuracy (definition)
 - 1705 (c) Factors affecting accuracy and precision
 - 1706 (i) Scanner
 - 1707 (ii) Operator
 - 1708 (iii) Patient
- 1709 2F.2.1.6 DXA Scanning of Finger and Heel (OS CALCIS)—1 hour
 - 1710 (1) Anatomy
 - 1711 (a) Regions of interest
 - 1712 (b) Bony landmarks
 - 1713 (c) Radiographic appearance
 - 1714 (2) Scan acquisition
 - 1715 (a) Patient instructions
 - 1716 (b) Patient positioning
 - 1717 (c) Evaluating pre-set scan parameters
 - 1718 (3) Scan analysis: BMD, T score, Z score

DRAFT 2 05/13/2014

- 1719 (4) Common problems
- 1720 (a) Nonremovable artifacts
- 1721 (b) Fractures or pathology
- 1722 **2F.2.1.7G** DXA Scanning of Forearm—2 hours
- 1723 (1) Anatomy
- 1724 (a) Regions of interest
- 1725 (b) Bony landmarks
- 1726 (c) Radiographic appearance
- 1727 (d) Adjacent structures
- 1728 (2) Scan acquisition
- 1729 (a) Patient instructions
- 1730 (b) Patient positioning
- 1731 (c) Evaluating pre-set scan parameters
- 1732 (3) Scan analysis
- 1733 (a) Accurate ROI placement
- 1734 (b) BMC, area, and BMD
- 1735 (c) T-score, Z-score
- 1736 (4) Common problems
- 1737 (a) Poor bone edge detection
- 1738 (b) Nonremovable artifacts
- 1739 (c) Variant anatomy
- 1740 (d) Fractures or pathology
- 1741 (5) Follow-up scans
- 1742 (a) Unit of comparison: BMD, T-score
- 1743 (b) Reproduce baseline study
- 1744 **2F.2.1.8H** DXA Scanning of Lumbar Spine—2 hours
- 1745 (1) Anatomy
- 1746 (a) Regions of interest
- 1747 (b) Bony landmarks
- 1748 (c) Radiographic appearance

DRAFT 2 05/13/2014

- 1749 (d) Adjacent structures
- 1750 (2) Scan acquisition
 - 1751 (a) Patient instructions
 - 1752 (b) Patient positioning
 - 1753 (c) Evaluating pre-set scan parameters
- 1754 (3) Scan analysis
 - 1755 (a) Accurate ROI placement
 - 1756 (b) BMC, area, and BMD
 - 1757 (c) T-score, Z-score
- 1758 (4) Common problems
 - 1759 (a) Poor bone edge detection
 - 1760 (b) Nonremovable artifacts
 - 1761 (c) Variant anatomy
 - 1762 (d) Fractures or pathology
- 1763 (5) Follow-up scans
 - 1764 (a) Unit of comparison: BMD, T score
 - 1765 (b) Reproduce baseline study
- 1766 **2F.2.1.9! DXA Scanning of Proximal Femur—2 hours**
- 1767 (1) Anatomy
 - 1768 (a) Regions of interest
 - 1769 (b) Bony landmarks
 - 1770 (c) Radiographic appearance
 - 1771 (d) Adjacent structures
- 1772 (2) Scan acquisition
 - 1773 (a) Patient instructions
 - 1774 (b) Patient positioning
 - 1775 (c) Evaluating pre-set scan parameters
- 1776 (3) Scan analysis
 - 1777 (a) Accurate ROI placement
 - 1778 (b) BMC, area, and BMD

DRAFT 2 05/13/2014

- 1779 (c) T-score, Z-score
- 1780 (4) Common problems
- 1781 (a) Poor bone edge detection
- 1782 (b) Nonremovable artifacts
- 1783 (c) Variant anatomy
- 1784 (d) Fractures or pathology
- 1785 (5) Follow-up scans
- 1786 (a) Unit of comparison: BMD, T-score
- 1787 (b) Reproduce baseline study; ~~and~~
- 1788 **and**
- 1789 2F.2.2 At least 480 hours of clinical training during which time DXA examinations are performed
1790 only under direct supervision of a Colorado qualified bone densitometry equipment
1791 operator or other qualified trainer:
- 1792 ~~2F.2.2.1 “Direct supervision” means the supervisor must be present in the facility and~~
1793 ~~immediately available to furnish assistance and direction throughout the~~
1794 ~~performance of a procedure. The supervisor is not required to be present in the~~
1795 ~~room when the procedure is performed.~~
- 1796 ~~2F.2.2.2 A signed statement by the individual(s) who provided supervision and~~
1797 ~~evaluation shall be kept on file to document dates and locations of clinical~~
1798 ~~training; and~~
- 1799 2F.2.3 Performance of the following imaging procedures (at least 30 examinations in total, with
1800 record of each examination kept on file):
- 1801 2F.2.3.1 DXA scanning of the forearm—10 examinations;
- 1802 2F.2.3.2 DXA scanning of the lumbar spine—10 examinations;
- 1803 2F.2.3.3 DXA scanning of the proximal femur—10 examinations; ~~and~~
- 1804 **and**
- 1805 2F.2.4 **A passing score on the American Registry of Radiologic Technologists (ARRT)**
1806 **Bone Densitometry Equipment Operator Examination. A passing score is a score**
1807 **of at least 75% correct.**
- 1808 ~~Approval by the Department as having passed the Bone Density Equipment Operator State~~
1809 ~~Examination required by 2.4.5.3.~~
- 1810 ~~2F.2.4.1 The application to be registered in the State of Colorado as a Bone Density~~
1811 ~~Equipment Operator shall be submitted on the appropriate Department form(s)~~
1812 ~~and shall contain all information required by the Department as indicated on the~~
1813 ~~form(s) and all accompanying instructions.~~
- 1814 ~~(1) The applicant shall complete Form R-80, “Application for Registration—Bone~~
1815 ~~Densitometry Equipment Operator”; or~~

Comment [JJ54]: The term “Direct supervision” is currently defined in Section 2.2 and is therefore deleted here.

DRAFT 2 05/13/2014

1816 (2) ~~The applicant shall verify clinical experience on Form R-81, "Clinical~~
1817 ~~Supervisory and Competency Statement—Bone Density Equipment~~
1818 ~~Operator"; and~~

1819 ~~2F.2.4.2 The application shall be accompanied by the required fee(s).~~

1820 ~~2F.2.4.3 Application to take the BDEO examination shall be made within one year upon~~
1821 ~~completion of the requirements of 2F.2.1 and within ninety (90) calendar days~~
1822 ~~upon completion of the requirements of 2F.2.2 and/or 2.F.2.3.~~

1823 ~~2F.2.4.4 Upon being contacted to schedule the BDEO examination, the applicant shall~~
1824 ~~complete the examination within ninety (90) calendar days.~~

1825 ~~2F.2.4.5 The Department will notify the applicant of a BDEO examination result upon~~
1826 ~~receipt by the Department.~~

1827 **and**

1828 ~~2F.3-2.5~~ Has maintained a minimum of eighteen (18) hours continuing education every three years,
1829 documented by certificate(s) or other attestation(s) of satisfactory completion, ~~submitted with an~~
1830 ~~updated Form R-82, "Application for Renewal—Bone Density Equipment Operator".~~
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DRAFT 2 05/13/2014

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1834 PART 2, APPENDIX 2G: RADIOLOGIST ASSISTANT (RA) ADEQUATE RADIATION SAFETY
1835 TRAINING AND EXPERIENCE

1836 ~~Any person who acts as a Radiologist Assistant or Radiologist Practitioner Assistant~~ ~~The registrant~~
1837 ~~shall require each radiologist assistant~~ to be an individual who is 18 years of age and has provided written
1838 documentation as evidence of:

Comment [BNV55]: Clarifying language is added at the recommendation of the State of Colorado Attorney General's Office.

1839 2G.1 Current certification as both ARRT(R) and a

1840 2G.1.1 Registered Radiologist Assistant (RRA); or

1841 2G.1.2 Radiology Practitioner Assistant (RPA) prior to January 1, 2008;

1842 Or

1843 2G.2 ~~Or, h~~Havinghaving:

1844 2G.2.1 Met the specific qualifications in education recognized by the ARRT, ASRT, ACR, or
1845 equivalent nationally recognized entity; and

1846 2G.2.2 Been trained and worked under the direction of a radiologist.
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DRAFT 2 05/13/2014

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1850 **PART 2, APPENDIX 2H: ADEQUATE EDUCATION AND TRAINING TO PERFORM RADIATION**
1851 **MACHINE ASSEMBLY, INSTALLATION AND/OR REPAIR**

1852 ~~The registrant shall require each~~Any individual who ~~independently~~ performs radiation machine assembly,
1853 installation or ~~repair~~ **service** to obtain and retain evidence demonstrating that the individual is registered
1854 with the Department in accord with Appendix 2B or 2C or that the following requirements are met ~~shall~~
1855 **meet the following educational and experience requirements:**

1856 2H.1 Completion of a structured educational program that includes training in radiation-~~producing device~~
1857 **machine** safety, assembly, installation and ~~repair~~**service, including, but not limited to: ; such**
1858 **as:**

1859 2H.1.1 A baccalaureate degree in electrical engineering with specialized training in radiation
1860 producing devices; or

1861 2H.1.2 A one-year associate degree in biomedical equipment repair; or

1862 2H.1.3 Equivalent ~~factory~~**manufacturer**, military or other technical school training;

1863 and

1864 2H.2 For each ~~type of equipment to be serviced~~**service category requested:**

1865 2H.2.1 ~~Education and/or e~~**At least six (6) months of supervised, documented training**
1866 ~~xperience providing on familiarity with the equipment, including protective measures to~~
1867 ~~reduce potentially hazardous conditions~~**assembly, installation and service of the**
1868 **applicable radiation machine. ; and**

1869 ~~2H.2.2 Completion of six months of supervised equipment assembly and repair.~~

DRAFT 2 05/13/2014

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1872 **PART 2, APPENDIX 2I: QUALIFIED INSPECTOR (QI) ADEQUATE RADIATION SAFETY TRAINING**
 1873 **AND EXPERIENCE**

Comment [JJ56]: This appendix 2I is replaced in its entirety with a revised appendix that follows this section.

1874 ~~As provided by 2.4.4, each qualified inspector shall be an individual who:~~

1875 ~~2I.1 Has provided written documentation as evidence of:~~

1876 ~~2I.1.1 Current certification by:~~

1877 ~~2I.1.1.1 The American Board of Radiology in diagnostic radiologic physics or radiological~~
 1878 ~~physics;~~

1879 ~~2I.1.1.2 The American Board of Radiology in therapeutic or nuclear medicine radiological~~
 1880 ~~physics; roentgen ray and gamma ray physics; x ray and radium physics; or~~
 1881 ~~equivalent specialty;~~

1882 ~~2I.1.1.3 The American Board of Medical Physics in Diagnostic Imaging Physics or~~
 1883 ~~Therapeutic Radiological Physics;~~

1884 ~~2I.1.1.4 The American Board of Health Physics (comprehensive certification);~~

1885 ~~2I.1.1.5 The Canadian College of Medical Physics;~~

1886 ~~2I.1.1.6 American Board of Nuclear Medicine Science; or~~

1887 ~~2I.1.1.7 A recognized equivalent specialty board.~~

1888 ~~2I.2 Or, for a qualified inspector of mammography facilities, has provided evidence of:~~

1889 ~~2I.2.1 Current certification as provided in 2I.1.1.1, 2I.1.1.2, or an equivalent specialty of the~~
 1890 ~~American Board of Radiology or another certifying body recognized by the American~~
 1891 ~~College of Radiology;~~

1892 ~~2I.2.2 Or the following combination of training and experience:~~

1893 ~~2I.2.2.1 A master of science, master of arts, or higher degree in physics, applied physics,~~
 1894 ~~biophysics, radiological physics, health physics, medical physics, or equivalent,~~
 1895 ~~from an accredited college or university; and~~

1896 ~~2I.2.2.2 At least two years of training in medical physics in the area of clinical diagnostic~~
 1897 ~~radiologic physics; and~~

1898 ~~2I.2.2.3 At least three (3) years of experience in conducting mammography equipment~~
 1899 ~~performance evaluations;~~

1900 ~~(1) Twenty (20) contact hours of documented specialized training in conducting~~
 1901 ~~surveys of mammography facilities;~~

1902 ~~(2) Experience of conducting surveys of at least one mammography facility and~~
 1903 ~~a total of at least ten (10) mammography units;~~

1904 ~~(a) No more than one survey of a specific unit within a period of sixty~~
 1905 ~~(60) calendar days can be counted towards the total~~
 1906 ~~mammography unit survey requirement;~~

DRAFT 2 05/13/2014

- 1907 (b) This experience must be accomplished under the direct supervision
1908 of a currently registered qualified inspector in mammography;
- 1909 ~~21.2.3 And sufficient continuing education and experience, including:~~
- 1910 ~~21.2.3.1 A minimum of fifteen (15) documented hours of continuing education in~~
1911 ~~mammography which are no more than thirty-six months old;~~
- 1912 ~~21.2.3.2 Surveys of at least two (2) mammography facilities and a total of at least six (6)~~
1913 ~~mammography units within the immediately previous twenty-four (24) months;~~
- 1914 ~~21.2.3.3 If performing a certification evaluation including a new modality of~~
1915 ~~mammography imaging, a minimum of eight (8) hours of training in the new~~
1916 ~~modality prior to performing such a certification evaluation independently;~~
- 1917 ~~21.2.3.4 If the applicant fails to meet the continuing education requirement, sufficient~~
1918 ~~additional continuing education hours, prior to performing any certification~~
1919 ~~evaluation; and~~
- 1920 ~~21.2.3.5 If the applicant fails to meet the continuing experience requirement, a sufficient~~
1921 ~~number of certification evaluations under the supervision of a currently registered~~
1922 ~~qualified inspector in mammography or a MQSA approved medical physicist to~~
1923 ~~bring the applicant's total certification evaluations up to the required two (2)~~
1924 ~~facilities and six (6) units in the previous twenty-four (24) months.~~
- 1925 ~~21.3 Or, for a qualified inspector other than for mammography facilities, has provided written~~
1926 ~~documentation as evidence that the individual:~~
- 1927 ~~21.3.1 Holds a degree in physics, applied physics, biophysics, biophysical engineering, medical~~
1928 ~~physics, radiologic physics, health physics, or equivalent, from an accredited college or~~
1929 ~~university; and~~
- 1930 ~~21.3.2 Has satisfactorily completed appropriate, acceptable, documented, full-time work~~
1931 ~~experience:~~
- 1932 ~~21.3.2.1 One year with a master or doctorate degree; and~~
- 1933 ~~21.3.2.2 Two years with an arts or sciences baccalaureate degree;~~
- 1934 ~~21.3.2.3 Three years with an Associate Degree; and~~
- 1935 ~~21.3.3 Has experience with each category of radiation machine for which approval is requested,~~
1936 ~~including but not limited to:~~
- 1937 ~~21.3.3.1 Measuring ionizing radiation;~~
- 1938 ~~21.3.3.2 Evaluating radiation machines and components;~~
- 1939 ~~21.3.3.3 Film processing;~~
- 1940 ~~21.3.3.4 The applicable requirements of the radiation regulations; and~~
- 1941 ~~21.3.3.5 Specialized training with the x-ray imaging and image processing system~~
1942 ~~software and hardware, if and when applicable and available; and~~
- 1943 ~~21.3.4 Has obtained training and experience required by Appendix 21:~~
- 1944 ~~21.3.4.1 Within the 7 years preceding the date of application; or~~
- 1945 ~~21.3.4.2 Through documented subsequent continuing education and experience.~~

DRAFT 2 05/13/2014

1946 ~~21.4 Or, has adequate prior experience as an experienced qualified inspector who has satisfied 21.3.3~~
 1947 ~~and 21.3.4 and demonstrated to the Department sufficient experience in the tasks required of a~~
 1948 ~~qualified inspector for which the individual is requesting authorization to be a qualified inspector;~~

1949 ~~21.5 Or, is approved by the Department as a provisional qualified inspector, fully meeting the~~
 1950 ~~requirements of 21.3.1 but as an alternative to fully satisfying 21.3.2, 21.3.3 and 21.3.4, having:~~

1951 ~~21.5.1 Submitted to the Department an application that includes the name and signature of each~~
 1952 ~~approved qualified inspector for whom the applicant will be working under general~~
 1953 ~~supervision in order to meet the requirements of 21.3.2, 21.3.3 and 21.3.4; and~~

1954 ~~21.5.2 Provided written documentation of having assisted with certification evaluation of at least five (5) radiation~~
 1955 ~~machines under the direct supervision of an approved qualified inspector.~~

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1957 **PART 2, APPENDIX 2I: QUALIFIED INSPECTOR (QI) ADEQUATE RADIATION SAFETY TRAINING**
 1958 **AND EXPERIENCE**

1959 **As provided by 2.4.4, approval of registration as a qualified inspector shall be given to an**
 1960 **individual who:**

1961 **21.1 Has provided written documentation that the individual:**

1962 **21.1.1 Holds an associates or higher degree in physics, applied physics, biophysics,**
 1963 **biophysical engineering, medical physics, radiologic physics, health physics, or equivalent,**
 1964 **from an accredited college or university; and**

1965 **21.1.2 Has experience with each category of radiation machine for which approval is**
 1966 **requested, including, but not limited to:**

1967 **21.1.2.1 Measuring ionizing radiation;**

1968 **21.1.2.2 Evaluating radiation machines and components;**

1969 **21.1.2.3 Evaluating facility radiation safety programs;**

1970 **21.1.2.4 Image processing;**

1971 **21.1.2.5 The applicable requirements of these regulations; and**

1972 **21.1.2.6 digital imaging and image processing system software and hardware, when**
 1973 **applicable and available; and**

1974 **21.1.3 The experience duration required by 21.1.2 will be in combination with the education**
 1975 **requirements from 21.1.1 as follows:**

1976 **21.1.3.1 One year with a masters or doctorate degree; or**

1977 **21.1.3.2 Two years with an arts or sciences baccalaureate degree; or**

1978 **21.1.3.3 Three years with an Associate Degree; and**

1979 **21.1.4 The experience required by 21.1.2 shall be acquired:**

1980 **21.1.4.1 Within the 7 years preceding the date of application; or**

1981 **21.1.4.2 Through documented subsequent continuing education and experience within**
 1982 **7 years preceding the date of the application.**

1983 **21.2 Approval for registration as a Provisional Qualified Inspector shall be given to an individual**
 1984 **who has met the requirements of 21.1.1 and has:**

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DRAFT 2 05/13/2014

- 2002 **21.2.1 Provided training program documentation describing how the Provisional Qualified**
 2003 **Inspector will meet the requirements of 21.1.2, 21.1.3 and 21.1.4. The training program**
 2004 **documentation shall:**
 2005
 2006 **21.2.1.1 Require direct supervision of the Provisional Qualified Inspector during the**
 2007 **evaluation of at least the initial five (5) radiation machines for each category inspected**
 2008 **by the Provisional Qualified Inspector; and**
 2009
 2010 **21.2.1.2 Identification of the Qualified Inspector(s) who will provide the Provisional**
 2011 **Qualified Inspector with general supervision until the requirements of 21.1.2, 21.1.3 and**
 2012 **21.1.4 are met.**
 2013
 2014 **21.2.2 At the time when the requirements of 21.1.2, 21.1.3 and 21.1.4 are met, the Provisional**
 2015 **Qualified Inspectors must apply for registration as a Qualified Inspector.**
 2016
 2017 **21.2.3 Registered Qualified Inspectors may apply for approval as a Provisional Qualified**
 2018 **Inspector for new categories that are being requested.**
 2019
 2020 **21.3 In addition to the requirements of 21.1, approval for registration in the Registered Medical**
 2021 **Physicist category shall be give to an individual who:**
 2022
 2023 **21.3.1 Is certified by:**
 2024
 2025 **21.3.1.1 The American Board of Radiology in Radiological Physics, Diagnostic**
 2026 **Radiological Physics or Medical Nuclear Physics; or**
 2027
 2028 **21.3.1.2 The American Board of Medical Physics in Diagnostic Radiological Physics or**
 2029 **Nuclear Medicine Physics; or**
 2030
 2031 **21.3.1.3 The Canadian College of Physicists in Medicine in Radiological Physics; or**
 2032
 2033 **21.3.1.4 American Board of Science in Nuclear Medicine in Nuclear Medicine Physics**
 2034 **and Instrumentation; or**
 2035
 2036 **21.3.1.5 A equivalent specialty board or certification approved by the department.**
 2037
 2038 **21.3.2 Approval for registration as a Provisional Registered Medical Physicist shall be given**
 2039 **to an individual who is in the process of certification to meet 21.3.1 and has:**
 2040
 2041 **21.3.2.1 Passed the initial testing requirements of the respective certifying**
 2042 **organization; and**
 2043 **21.3.2.2 Provided training program documentation describing how the Provisional**
 2044 **Registered Medical Physicist will be supervised. The training program documentation**
 2045 **will include:**
 2046 **(a) The names of the Registered Medical Physicist(s) who will provide general,**
 2047 **direct or personal supervision as the individual works to meet the**
 2048 **requirements of their certifying organization; and**
 2049
 2050 **(b) A list of specific duties-, and the level of supervision for each duty, that the**
 2051 **Provisional Registered Medical Physicist will perform.**
 2052
 2053 **21.4 In addition to the requirements of 21.1 and 21.3, approval for registration in the Mammography**
 2054 **category shall be approved for a Registered Medical Physicist who:**
 2055
 2056 **21.4.1 Has the following combination of initial training and experience:**
 2057
 2058 **21.4.1.1 A master's degree or higher in a physical science from an accredited**
 2059 **institution with no less than 20 semester hours in physics; and**
 2060
 2061 **21.4.1.2 Have 20 contact hours of specialized training in conducting mammography**
 2062 **facility evaluations; and**

Comment [BNV57]: Stakeholder suggestion to clarify the level of supervision.

DRAFT 2 05/13/2014

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- 21.4.1.3 Experience of conducting evaluations of at least one mammography facility and a total of at least ten (10) mammography units under the following conditions;**
(a) No more than one evaluation of a specific unit within a period of sixty (60) calendar days can be counted towards the total mammography unit survey requirement; and
(b) This experience must be accomplished under the direct supervision of a Registered Medical Physicist with approval in the Mammography category;
- 21.4.2 And the following continuing education and experience:**
- 21.4.2.1 At least fifteen (15) documented hours of continuing education in mammography which are no more than thirty-six months old;**
(a) Medical physicists failing to maintain the continuing education requirements of 21.4.2.1 must meet 21.4.2.1 requirements prior to independently conducting evaluations of mammography facilities.
- 21.4.2.2 Surveys of at least six (6) mammography units operated in at least two (2) mammography facilities within the immediately previous twenty-four (24) months;**
(a) Medical physicists failing to maintain the continuing experience requirements of 21.4.2.2 must meet 21.4.2.2 requirements while under the direct supervision of a Registered Medical Physicist with approval in the Mammography category.
- 21.4.2.3 Before a medical physicist may begin independently performing mammographic evaluations of a new mammographic modality, that is, a mammographic modality other than one for which the physicist received training to qualify under 21.4.1, the physicist must receive at least 8 hours of training in evaluating units of the new mammographic modality.**
- 21.5 In addition to the requirements of 21.1, approval for registration as a Registered Medical Physicist for the Therapeutic Radiation Machines category shall be give to an individual who:**
- 21.5.1 Is certified by:**
- 21.5.1.1 The American Board of Radiology in Therapeutic Radiological Physics or Radiological Physics; or**
- 21.5.1.2 The American Board of Medical Physics in Radiation Oncology Physics; or**
- 21.5.1.3 The Canadian College of Physicists in Medicine in Radiation Oncology Physics; or**
- 21.5.1.4 A equivalent specialty board or certification approved by the department.**

DRAFT 2 05/13/2014

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2108 **PART 2, APPENDIX 2J: QUALIFIED TRAINER (QT) ADEQUATE RADIATION SAFETY TRAINING**
2109 **AND EXPERIENCE**

2110 ~~Any person who acts as a qualified trainer shall be an individual who~~
2111 ~~The registrant shall require each qualified trainer to be an individual who:~~

Comment [BNV58]: Clarifying language added at the recommendation of the State Attorney General's Office.

2112 2J.1 Has training and experience commensurate with criteria and standards for the radiation machine
2113 application(s) that adequately prepare the individual to carry out the specified training
2114 assignment(s).

2115 2J.1.1 An interpreting physician, radiologic technologist or medical physicist who is approved
2116 under MQSA program requirements is considered a qualified trainer for the respective
2117 competency.

2118 2J.1.2 A physician, radiologic technologist, or operator who is approved pursuant to 2.6.1 is
2119 considered a qualified trainer for the respective competency.

2120 2J.1.3 Other examples of an individual who might be considered by the Department to be a
2121 qualified trainer for the purpose of providing training to meet the requirements of this part
2122 include, but are not limited to, a trainer in a post-secondary-school training institution or a
2123 manufacturer's representative.
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DRAFT 2 05/13/2014

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2127 **PART 2, APPENDIX 2K: AUTHORIZED USER (24.3.3) FOR RADIATION THERAPY (24.7 OR 24.8)**
 2128 **ADEQUATE RADIATION SAFETY TRAINING AND EXPERIENCE**

2129 ~~Any person who acts as an Authorized User for any therapeutic radiation machine subject to Part~~
 2130 ~~24 shall be a physician who has a current active State of Colorado license and~~
 2131 ~~registrant, or licensee for any therapeutic radiation machine subject to 24.7 or 24.8 shall require an~~
 2132 ~~authorized user of therapeutic radiation machines to be a physician who has a current active State of~~
 2133 ~~Colorado license and:~~

Comment [BNV59]: Clarifying language added at the recommendation of the State Attorney General's Office.

2134 2K.1 Has provided evidence of current certification in:

2135 2K.1.1 Radiology or therapeutic radiology by the American Board of Radiology; or

2136 2K.1.2 Radiation oncology by the American Osteopathic Board of Radiology; or

2137 2K.1.3 Therapeutic radiology by the Royal College of Physicians and Surgeons of Canada; or

2138 2K.1.4 Radiology, with specialization in radiotherapy, by the British Royal College of Radiology,
 2139 as a British "Fellow of the Faculty of Radiology" or "Fellow of the Royal College of
 2140 Radiology" ; or

2141 2K.1.5 Radiation therapy by a recognized specialty board that requires each candidate for
 2142 certification to:

2143 2K.1.5.1 Satisfactorily complete a certification process that includes training equivalent
 2144 to that required in 2K.2.1 and supervised practical experience equivalent to that
 2145 required by 2K.2.2; and

2146 2K.1.5.2 Pass an examination, administered by diplomates of the specialty board, that
 2147 tests knowledge and competence in radiation safety, treatment planning, quality
 2148 assurance, and human use of therapeutic radiation machines; or

2149 2K.2 Has satisfied the following criteria:

2150 2K.2.1 Satisfactory completion of 700 hours in basic techniques applicable to the use of a
 2151 therapeutic radiation machine unit, including:

2152 2K.2.1.1 At least 200 hours of classroom and laboratory training in the following areas:

2153 (1) Radiation physics and instrumentation;

2154 (2) Radiation protection;

2155 (3) Mathematics pertaining to the use and measurement of radioactivity; and

2156 (4) Radiation biology; and

2157 2K.2.1.2 At least 500 hours of work experience, involving:

2158 (1) Reviewing full calibration measurements and periodic quality assurance
 2159 checks;

2160 (2) Evaluating prepared treatment plans, calculation of treatment times, and
 2161 patient treatment settings;

DRAFT 2 05/13/2014

- 2162 (3) Using administrative controls to prevent reportable medical events;
- 2163 (4) Implementing emergency procedures to be followed in the event of the
2164 abnormal operation of a therapeutic radiation machine unit or console;
2165 and
- 2166 (5) Checking and using of radiation survey meters; and
- 2167 2K.2.2 Completion of 3 years of supervised clinical experience in radiation therapy, including:
- 2168 2K.2.2.1 An approved formal training program, approved by the Residency Review
2169 Committee of the Accreditation Council for Graduate Medical Education or
2170 Committee on Post Graduate Training of the American Osteopathic Association;
2171 and
- 2172 2K.2.2.2 Supervised clinical experience, under the supervision of an authorized user
2173 who meets the requirements of this Appendix 2K, or equivalent requirements, to
2174 include:
- 2175 (1) Examining individuals and reviewing their case histories to determine their
2176 suitability for therapeutic radiation machine treatment, and any limitations
2177 and/or contraindications;
- 2178 (2) Selecting proper dose and how it is to be administered;
- 2179 (3) Calculating the therapeutic radiation machine doses and collaborating with
2180 the authorized user in the review of patients' progress and consideration
2181 of the need to modify originally prescribed doses and/or treatment plans
2182 as warranted by patients' reactions to radiation; and
- 2183 (4) Post-administration follow-up and review of case histories.
- 2184 2K.3 Training and experience required by Appendix 2K shall have been obtained:
- 2185 2K.3.1 Within the 7 years preceding the date of license application; or
- 2186 2K.3.2 Through documented subsequent continuing education and experience.
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DRAFT 2 05/13/2014

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2190 **PART 2, APPENDIX 2L: RADIATION THERAPIST (24.3.5) ADEQUATE RADIATION SAFETY**
 2191 **TRAINING AND EXPERIENCE**

2192 **Any person who operates a radiation therapy machine on living humans shall be an individual**
 2193 **who** ~~The applicant, registrant, or licensee shall require the operator of a therapeutic radiation machine for~~
 2194 ~~human use to be an individual who:~~

Comment [BNV60]: Clarifying language added at the recommendation of the State Attorney General's Office.

2195 2L.1 Has provided evidence of:

2196 2L.1.1 Successful completion of a training program in radiation therapy which has resulted in a
 2197 certificate, associate degree, or baccalaureate degree in a radiologic technology program
 2198 that complies with the requirements of:

2199 2L.1.1.1 The Joint Review Committee on Education in Radiologic Technology (consult
 2200 the 1988 Essentials and Guidelines of an Accredited Educational Program for the
 2201 Radiation Therapy Technologist or the 2001 Standard for an Accredited
 2202 Educational Program in Radiological Sciences); or

2203 2L.1.1.2 An accreditation organization recognized by the Council for Higher Education
 2204 Accreditation as an accrediting agency, other organizations recognized by the
 2205 United States Department of Education (USDE) or the Council For Higher
 2206 Education Accreditation (CHEA) to accredit educational programs in radiation
 2207 therapy; and

2208 2L.1.2 Accreditation as a radiation therapist by, and having continued to maintain registration by
 2209 meeting the requirements of, The American Registry of Radiologic Technologists
 2210 (ARRT), or

2211 2L.1.3 Accreditation by a specialty board recognized by the Department as equivalent to ARRT.

2212 2L.2 Has maintained a minimum of twenty-four (24) hours of continuing education every two years in the
 2213 areas of radiology, radiation safety, radiography and similar fields. This education shall:

2214 ~~2L.2.1 Conform to guidelines equivalent to the August 2008 ARRT Continuing Education~~
 2215 ~~Requirements for Renewal of Registration; and~~

2216 ~~2L.2.2-B~~ be documented by certificate(s) or other attestation(s) of satisfactory completion.
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DRAFT 2 05/13/2014

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2220 **PART 2, APPENDIX 2M: QUALIFIED MAMMOGRAPHER ADEQUATE RADIATION SAFETY**
 2221 **TRAINING AND EXPERIENCE**

2222 ~~The registrant shall require each mammographer to be an individual who~~**Any individual who performs**
 2223 **mammography shall meet the following educational and experience requirements:**

2224 2M.1 ~~Has provided evidence that the individual is certified in mammography as ARRT(M)~~**Is certified by**
 2225 **the American Registry of Radiologic Technologists in Mammography and meets the**
 2226 **following initial requirements, meeting the requirements of 21 CFR 900, in particular**
 2227 **900.12(a)(2), April 1, 2010;**

2228 **2M.1.1 Forty (40) hours or more documented training including breast anatomy and**
 2229 **physiology, positioning and compression, quality assurance/quality control**
 2230 **techniques, and imaging of patients with breast implants; and**

2231 **2M.1.2 Eight (8) hours or more documented training in each mammography modality to be**
 2232 **used by the technologist in performing mammography examinations; and**

2233 **2M.1.3 Performance of at least 25 mammograms under the direct supervision of a**
 2234 **qualified mammographer.**

2235 ~~2M.2 Or, is an ARRT(R) accepted by the Department as an experienced mammographer who has~~
 2236 ~~provided evidence demonstrating to the Department mammography training and experience~~
 2237 ~~equivalent to the Content Specifications for the Examination for the ARRT Mammography~~
 2238 ~~Certification (July 2009), including at a minimum:~~

2239 ~~2M.2.1 Forty (40) hours or more documented training including breast anatomy and physiology,~~
 2240 ~~positioning and compression, quality assurance/quality control techniques, and imaging~~
 2241 ~~of patients with breast implants; and~~

2242 ~~2M.2.2 Eight (8) hours or more documented training in each mammography modality to be used~~
 2243 ~~by the technologist in performing mammography examinations; and~~

2244 ~~2M.2.3 Performance, under the direct supervision of a mammographer, of a minimum of 25~~
 2245 ~~examinations;~~

2246 2M.3-2 Or, is a ~~radiologic technologist (mammographer in training or provisional mammographer~~
 2247 **working under the direct supervision of a qualified mammographer), who:**

2248 2M.3.2.1 Is enrolled in or has completed a structured **and documented** training program that
 2249 **meets the requirements of 2M.1.1 and 2M.1.2**~~includes a minimum of 40 contact hours~~
 2250 ~~of documented training specific to mammography; and~~

2251 2M.3.2-2 ~~Is completing or has completed, at all times during examination procedures under the~~
 2252 ~~direct supervision of a mammographer present on the premises and available for prompt~~
 2253 ~~consultation, the tasks in 2M.2.1, 2M.2.2 and 2M.2.3; and~~

2254 2M.3.2.3-2 ~~Has applied for a provisional certificate on Form R-64, "Criteria for a Structured~~
 2255 ~~Training Program in Mammography," including all information required by the form and~~
 2256 ~~by all accompanying instructions, accompanied by the fee specified in Appendix 12A;~~

2257 2M.3.4 ~~Has obtained from the Department a provisional certificate valid for one year from the~~
 2258 ~~date of issuance or a one-time renewal certificate valid for one additional year only~~**Has**
 2259 **been approved as a Provisional Mammographer prior to performing mammograms**
 2260 **to meet the requirements of 2M.1.3.**

Comment [BNV61]: This section previously allowed individuals to perform mammography without being certified by the ARRT in Mammography. It is being removed as this is not allowed by the department, consistent with national standards.

DRAFT 2 05/13/2014

2261

2262 2M.4-3 Continuing ~~training education~~ and ~~continuing~~ experience ~~required by Appendix 2M shall have~~
 2263 ~~been obtained:~~

2264 ~~2M.4.1 Within the 7 years preceding the date of application, except when an attestation of~~
 2265 ~~adequate training and experience prior to October 1, 1994 has been provided; or~~

Comment [BNV62]: Continuing education expires every three years.

2266 ~~2M.4.2~~ 2M.3.1 Through documented subsequent ~~c~~Continuing education and experience:

2267 ~~2M.4.2.1~~ 2M.3.1.1 The ~~A~~ mammographer shall ~~document complete~~ fifteen (15) hours of
 2268 continuing education ~~completed~~ within the immediate prior 36 months.

2269 (1) A mammographer who fails to meet ~~this the~~ continuing education
 2270 requirement ~~of 2M.3.1.1~~ shall obtain a sufficient number of continuing
 2271 education units (~~CEU~~) in mammography to bring their total up to at least
 2272 fifteen (15) ~~CEU in the previous 36 months.~~

2273 (2) A mammographer who fails to meet ~~this the~~ continuing education
 2274 requirement ~~of 2M.3.1.1~~ shall work only under direct ~~or personal~~
 2275 supervision ~~of a qualified mammographer until the requirement is~~
 2276 ~~met.~~

2277 **2M.3.2 Continuing Experience**

2278 ~~2M.4.2.2~~ 2M.3.2.1 The ~~A~~ mammographer shall have performed a minimum of 200
 2279 mammography examinations within the immediate prior 24 months.

2280 (1) A mammographer who fails to meet this continuing experience requirement
 2281 shall perform a minimum of 25 mammography examinations under the
 2282 direct supervision of a **qualified** mammographer before resuming the
 2283 performance of unsupervised mammography examinations.
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DRAFT 2 05/13/2014

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PART 2, APPENDIX 2N: INDUSTRIAL RADIATION MACHINE OPERATOR ADEQUATE RADIATION SAFETY TRAINING AND EXPERIENCE

2289 ~~The registrant shall require each operator of Any person who operates~~ an analytical, industrial or other
2290 non-healing-arts radiation generating machine ~~shall to~~ be an individual who:

Comment [JJ63]: Clarifying language added at the recommendation of the State Attorney General's Office.

2291 2N.1 For industrial radiography, has complied with all applicable training and experience requirements of
2292 Part 5 and these regulations.

2293 2N.2 For all non-healing-arts applications (including but not limited to analytical, forensic, morgue, and
2294 homeland security uses) not subject to Part 5, has provided written documentation as evidence
2295 of:

2296 2N.2.1 At least eight (8) hours of general training and experience in radiation safety acceptable
2297 to the Department, except as follows:

2298 2N.2.1.1 ~~Four~~ **One (1)** hours for any hand-held non-healing-arts radiation generating
2299 machine; or

Comment [BNV64]: Feedback received from stakeholders (primarily Qualified Experts) indicated that the original four hour training requirement may be excessive for this type of device. A 1 hour course is expected to be adequate for such devices.

2300 2N.2.1.2 One (1) hour for any cabinet or self-contained airport or port-of-entry x ray
2301 machine or system; or

2302 2N.2.1.3 Sufficient training and experience acceptable to the Department.

2303 2N.2.2 ~~Successful completion of~~ **The training required by 2N.2.1 shall include** radiation safety
2304 training specific for each radiation machine used, and demonstration of an understanding
2305 thereof, including instruction in the:

2306 2N.2.2.1 Proper operating procedures for the equipment, having read the operating
2307 manual;

2308 2N.2.2.2 Identification of radiation hazards associated with the use of the equipment;

2309 2N.2.2.3 Significance of the various radiation warning, safety devices, and interlocks
2310 incorporated into the equipment, or the reasons they have not been installed on
2311 certain pieces of equipment, and the extra precautions required in such cases;

2312 2N.2.2.4 Recognition of symptoms of an acute localized exposure; and

2313 2N.2.2.5 Proper procedures for reporting an actual or suspected exposure; and

2314 2N.2.3 Has subsequent documented annual training.

2315

EDITOR'S NOTES

2317 6 CCR 1007-1 has been divided into smaller sections for ease of use. Versions prior to 4/1/07 and rule
2318 history are located in the first section, 6 CCR 1007-1. Prior versions can be accessed from the History link
2319 that appears above the text in 6 CCR 1007-1. To view versions effective on or after 4/1/07, Select the
2320 desired part of the rule, for example 6 CCR 1007-1 Part 1 or 6 CCR 1007-1 Parts 8 - 10.

History

2322 *[For history of this section, see Editor's Notes in the first section, 6 CCR 1007-1]*

2323