



*DELAWARE HEALTH AND SOCIAL SERVICES*  
Division of Public Health  
Office of Radiation Control

# **Authority on Radiation Protection**

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Users Guide to Radiation Technologist/Technician Certification

BASED ON THE

“REGULATION FOR THE CERTIFICATION OF RADIATION  
TECHNOLOGISTS/TECHNICIANS”

Adopted February 27, 1989

*AMENDED*

*July 24, 1995*

*July 11, 2002*

*November 11, 2003*

*February 11, 2006*

*May 11, 2014*

BY THE

**AUTHORITY ON RADIATION PROTECTION**

In conformance with 16 Del. C. § 7406 (c)

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## INTRODUCTION

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To assure that proper safety standards are met, Delaware's Authority on Radiation Protection requires that all Radiation Technologists/Technicians working in health care be certified as competent in radiation protection principles. This user's guide provides direction for professionals seeking to become certified as Radiation Technologists/Technicians by the State of Delaware.

Applications are available online, at <http://www.dhss.delaware.gov/dhss/dph/hsp/orc.html> or may be obtained by contacting the Office of Radiation Control at 302-744-4546. Additional resources such as a periodically refreshed, searchable PDF file with status of all state-certified Radiation Technologists/Technicians, Notice to Radiation Workers for posting in facilities, and Sample Letter for Declaring Pregnancy are also available at this website.

Review all applications before submitting to the Office of Radiation Control to ensure they are filled out completely and that required supporting documentation, such as ARRT Credential and correct payment are included. Incomplete applications will be returned.

If you have questions, contact the Office of Radiation Control at 302-744-4546.

*Frances Esposito, MD  
Chairperson, 2018  
Authority on Radiation Protection  
State of Delaware*

*Frieda Fisher-Tyler, CIH  
Administrator,  
Office of Radiation Control  
Delaware Division of Public Health*

**STATE OF DELAWARE**  
*RADIATION TECHNOLOGIST/TECHNICIAN CERTIFICATION MANUAL*

**TABLE OF CONTENTS**

INTRODUCTION		Page 1
SECTION I	Certification Process and Requirements	Page 3
SECTION II	Radiation Hazards	Page 12
SECTION III	Operating Hazards	Page 13
SECTION VI	Federal Standards	Page 14
SECTION VII	Delaware Regulations	Page 15
 <b>APPENDICES</b>		
APPENDIX A	Notice of Registration	Page 18
APPENDIX B	Notice to Employees	Page 19
APPENDIX C	Delaware Sample Letter for Declaring Pregnancy	Page 20
APPENDIX D	Request for Exemption from Social Security Number Requirement	Page 21
APPENDIX E	Guideline for Safety Procedures - Dental	Page 22
APPENDIX F	Guideline for Safety Procedures - Medical	Page 24
APPENDIX G	Guideline for Safety Procedures - Veterinary	Page 26
APPENDIX H	Information and Maintenance Record – Inspections	Page 28
APPENDIX I	National Credentialing Organizations	Page 29
APPENDIX J	DEFINITIONS	Page 30
CONTACT INFORMATION FOR OFFICE OF RADIATION CONTROL		Page 33

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## I. CERTIFICATION

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### A. *The Certificate*

The Delaware Radiation Technologist/Technician Certificate is a permit/license to practice Radiation Technology in Delaware, as required by Delaware Radiation Control Regulations. It is issued to qualified individuals who meet the requirements of the Radiation Technologist/Technician Certification Regulation, as amended, by the Office of Radiation Control (ORC) in the Division of Public Health. ORC is the Administrative Agent of the Authority on Radiation Protection.

- ▶ The certificate is valid only when signed by the Radiation Technologist/Technician to whom it has been issued and the Chairman of the Authority on Radiation Protection.
- ▶ Under a provision of the Delaware Radiation Technologist/Technician Certification Regulation, “holders of a certificate under these regulations shall display the official certificate or a verified copy in each place of regular employment.”
- ▶ The certificate is valid for three years from date of issue.
- ▶ The certificate is renewable by application to the Office of Radiation Control, accompanied by payment of the prescribed renewal fee and supporting documentation, as required.

### B. *Who Must be Certified?*

Each Radiation Technologist/Technician in Delaware must be certified in order to practice, according to the “Radiation Technologist/Technician Certification Regulation,” as established by Delaware’s Authority on Radiation Protection on February 27, 1989. **THIS IS A LEGAL REQUIREMENT.** Individuals administering radiation to patients who do not hold a current Radiation Technologist/Technician Certificate in good standing can subject their employer (registered radiation facility) to citation under the Delaware Radiation Control Regulations, as amended.

Students who administer radiation under the direct supervision of a Licensed Practitioner or certified Radiation Technologist as part of their training, will not be certified. This applies to a student enrolled in and attending a school or college of medicine, osteopathy, chiropractic, podiatry, dentistry, radiation technology, or dental hygiene.

C. *Requirements for Certification*

*Applications are available for downloading from the ORC webpage at the link below, or may be obtained by contacting the ORC at 302- 744-4546.*

<http://www.dhss.delaware.gov/dhss/dph/hsp/orc.html>

or, enter keywords, "Delaware Office of Radiation Control" into a search engine.

**Application for Recognition of National Credential from ARRT, DANB, CCI, ISCD, or NMTCB:**

Each Radiation Technologist who is nationally credentialed or has confirmation for national testing, must submit the completed and signed official application form (ORC-R16-N) to:

Delaware Division of Public Health  
Office of Radiation Control  
417 Federal Street  
Dover, Delaware 19901

**The application for certification must include:**

- ▶ A request that the Certificate be granted by filing the appropriate, **official application form (ORC-R16-N)**.
- ▶ Applicant's **full name, home address, date of birth, social security number, and daytime phone number** as required on the application form.
- ▶ The nonrefundable/nontransferable application fee in the form of check or money order made payable to the State of Delaware (*cash will not be accepted*). **Allow a minimum of three weeks for processing.**
- ▶ **A photocopy of the National Credential**, or a copy of the seat reservation for national credential examination or proof of passing an approved examination is required. (DANB RHS) (see Appendix IX for list of National Credentials recognized by Delaware).
- ▶ **Applicants without a social security number** must submit the "Request for Exemption from Social Security Number Requirement" available on Delaware Division of Professional Regulation website: [www.DPR.Delaware.gov](http://www.DPR.Delaware.gov) with their application.
- ▶ **Incomplete applications will be returned.**

**Application/Request for State Exam - Medical Radiation Technician, Limited Scope or Bone Densitometry administered by the American Registry of Radiologic Technologists (ARRT):**

- ◆ Contact the Office of Radiation Control or download the **official application form, ORC-R16-S**, from the webpage.
- ◆ Complete the Delaware application with full name, home address, social security number, date of birth, and daytime telephone number.
- ◆ **Allow a minimum of three weeks for processing.**
- ◆ **Incomplete applications will be returned.**

**Application/Request for State Certificate - Dental Radiation Technician:**

- ◆ Contact the Office of Radiation Control or download the **official application form, ORC-R16-N**, from the webpage.
- ◆ Submit completed, official Delaware application form with payment of nonrefundable/nontransferable application fee of \$ 50.00, in the form of check or money order made payable to the State of Delaware, (*cash will not be accepted*).
- ◆ **Allow a minimum of three weeks for processing.**
- ◆ Students enrolled in a Vocational Technical High School may submit a letter from their Dental Assisting Program Director, to have the \$50.00 application fee waived.
- ◆ Enclose a photocopy of the official Exam Test Result Letter or official DANB RHS Certificate with application.
- ◆ **Incomplete applications will be returned.**

Radiation Technologist/Technician Certificates will be sent to the home address provided by the applicant on the official application form. **Certificate holders are required to notify the Office of Radiation Control in writing with any change of name, address or other contact information** to ensure that Agency records remain accurate throughout the three-year certification cycle. **If requesting name change, you are required to submit supporting documentation with your change of address/name form, e.g. copy of marriage license, judgment of divorce, or other court papers.**

***Failure to provide change of name information in a timely manner may jeopardize your certification standing.***

## 2. Certification

Certification will be granted if any one of the following criteria is satisfied:

- a. **The applicant presents evidence of possessing a current credential granted by a recognized national voluntary credentialing body (see Appendix IX), issued on the basis of an examination satisfactory to the Authority. Note that the Authority will not accept any certification, registration, or license/permit issued by another state.**
- b. The applicant presents evidence of completing an appropriate course of study, approved by the Joint Review Committee on Education in Radiologic Technology/Therapy, the Joint Review Committee on Education in Cardiovascular Imaging or the Commission on Dental Accreditation (CODA), or an equivalent course of study acceptable to the Authority, and **has a seat reservation to take the appropriate national credentialing examination** for which a temporary state certificate will be granted.
- c. The applicant passes the Authority-approved state examination, **and** is at least 18 years of age.

## 3. Examination

The Authority has authorized the use of two state examinations specified below:

- a. The American Registry of Radiologic Technologists Limited Scope State Licensing Examination: This test consists of six parts: 100 "CORE" questions that every medical radiation technician takes about general radiation safety and patient care. Five additional specialty exam sections are provided for specific body part (anatomical) areas. An examinee may choose from Chest, Extremities, Skull, Spine and/or Podiatry. This computer-based, Limited Scope exam is administered by the American Registry of Radiologic Technologists (ARRT), through local computer test centers, specifically for State licensing requirements. It is non-transferable to other states. Prior to taking medical x-rays, the applicant must successfully pass the 100-question CORE portion of the exam, AND at least one other specialty (body part) exam section, before a certificate will be issued. Technicians will only be certified to x-ray body parts based on the specialty test sections passed.

- b. The American Registry of Radiologic Technologists Bone Densitometry Operator's Examination: This test consists of 60 questions, in eight parts: Basic Concepts, Equipment Operation and Quality Control, Radiation Safety, and DXA Scanning of Finger, Heel (Os Calcis), Forearm, Lumbar Spine and Proximal Femur. This computer-based exam is administered by the American Registry of Radiologic Technologists (ARRT), through local computer test centers, specifically for State licensing requirements. It is non-transferable to other states. Prior to taking bone densitometry x-rays, the applicant must successfully pass the exam, before a certificate will be issued.

#### D. Taking the Examination

1. The examination process is administered by a test administration firm approved by the Authority on Radiation, and contracted by the Division of Public Health, Office of Radiation Control. The test administration organization will communicate directly with the applicant, and provide specific information on scheduling, exam reservation documentation, and sites for testing.

Applicants are responsible for payment to, and registration with, the test administration organization to schedule to sit for an exam on a given date.

**If you do not hear from the test administration organization within three weeks of registering to sit for an exam, you are responsible for contacting them directly to determine the status of your registration.** Contact ORC at 302-744-4546 immediately if you experience any customer service issues with a test administration organization.



### 3. DENTAL APPLICANTS

- Step 1: Applicant applies directly to the test administration firm per its application process.
- Step 2: Applicant may choose to buy an additional Exam Study Guide as an option in the Candidate Registration process, and submits the appropriate Study Guide fee directly to the test administration firm, at its discretion.
- Step 3: Applicant receives Test Admission Notice from the test administration firm.
- Step 4: Applicant takes the examination under the monitoring of the test administration firm. The test administrator (proctor) is responsible for ensuring that the applicant completes the examination within the allotted time without any oral or written assistance, or within approved conditions for applicants requesting reasonable accommodation under the Americans with Disabilities Act.
- Step 5: The test administration firm notifies the applicant of his/her test result, by mail.
- Step 6: Applicant submits application for radiography certificate to the Office of Radiation Control (R-16-N), see Section 3, "Requirements for Certification," with photocopy proof of passing the approved examination.

Examinees who have passed the examination and are at least 18 years of age will receive a certificate to practice as a Dental Radiation Technician. Examinees who pass the examination but are under 18 years of age will receive a certificate to practice upon reaching their 18<sup>th</sup> birthday.

**NOTE: UNTIL EXAMINEE RECEIVES OFFICIAL WRITTEN NOTIFICATION OF A PASSING GRADE, APPLIES FOR AND RECEIVES THEIR CERTIFICATE FROM THE STATE OFFICE OF RADIATION CONTROL, THE EXAMINEE SHALL NOT PERFORM ANY RADIOGRAPHIC PROCEDURES, UNLESS WORKING UNDER DIRECT SUPERVISION AS A STUDENT.**

#### 4. MEDICAL LIMITED SCOPE AND BONE DENSITOMETRY APPLICANTS

- Step 1. Applicant submits application for radiography certificate to the ORC (R-16-N), see Section 3, "Requirements for Certification."
- Step 2. Applicant's name is added to ORC candidate list for the requested ARRT State Examination (Limited Scope or Bone Densitometry).
- Step 3. ORC sends a letter to the candidate with instructions for making payment to the ARRT.
- Step 4. ARRT sends candidate's admission ticket for examination to Examinee, who schedules their exam date directly with the ARRT, the test administration firm.
- Step 5. Candidate sits for the ARRT examination,
- Step 6. Candidate test scores received by ORC.
- Step 7. The Office of Radiation Control notifies the examinee of pass/fail results. Examinees who have passed the examination will receive a certificate. Examinees who are unsuccessful will be provided information on how to apply to retest.

**NOTE: UNTIL EXAMINEE RECEIVES FINAL WRITTEN NOTIFICATION OF A PASSING GRADE AND RADIOGRAPHY CERTIFICATE FROM THE STATE OF DELAWARE (ORC), THE EXAMINEE SHALL NOT PERFORM ANY RADIOGRAPHIC PROCEDURES, UNLESS WORKING UNDER DIRECT SUPERVISION AS A STUDENT.**

#### E. Scoring the Examination

Test Administration Organizations report test scores to the Office of Radiation Control. Passing rates are determined based on the particular scoring mechanism used by each Test Administration Organization. The Authority on Radiation Protection determines specific passing rates for each examination consistent with scoring mechanism used by each Test Administration Organization. **The Office of Radiation Control issues certificates to examinees who earn a passing score on their requested examination, and are at least 18 years of age.**

## F. Retesting Privileges

Examinees may be re-examined twice per 12-month period following the initial examination.

Examinees who hold a temporary state certificate based on having qualified to sit for their national board exam, and fail to pass their national Credentialing Examination will lose their temporary state privileges, and are not permitted to perform radiographic procedures. Examinees may be re-examined twice per 12-month period following the initial examination. However, only one temporary state certificate will be issued, as specified by regulation.

## G. Renewal of Certification

1. Permanent Radiation Technologist/Technician Certificates are valid for a period of three years, and must be renewed no later than 30 days following the expiration date printed on the certificate in order for the certificate holder to continue to operate radiation equipment. Radiation Technologist/Technician Certificates are required to be posted in their place of employment.
2. Radiation Technologists/Technicians are responsible for submitting a renewal form, and payment of a nonrefundable/nontransferable renewal fee of \$ 50 postmarked by the expiration date on their certificate, in the form of check or money order made payable to the State of Delaware (cash will not be accepted). Renewal applications postmarked after the expiration date on the certificate must be submitted with a late renewal fee of \$ 100. Remember to allow a minimum of three weeks for processing. Incomplete renewal forms will be returned.
3. Radiation Technologists/Technicians will be issued a renewed certificate with the legal name on file with the Agency Form, unless their application also includes proof of name change form (R16A, with photocopy of marriage license or court papers).
4. Radiation Technologists/Technicians who fail to renew their certificate within the grace period of 30 days following the expiration date, and who continue to operate radiation equipment, will subject their employers (registered radiation facilities) to citation under the Delaware Radiation Control Regulations.
5. Radiation Technologists/Technicians who fail to renew their certificate within 180 days following the expiration date on their certificate will be considered to have allowed their certificate to lapse (terminate), and must re-apply for certification, qualifying by recognition of an existing national credential, or by passing an Authority on Radiation Protection approved state radiation technician examination (see Requirements for Certification Section 1.C).

## H. PENALTIES

Whoever shall:

1. Sell or fraudulently obtain or furnish any radiation technology diploma, certificate, or renewal, or record of the same, or aid or abet therein; or
2. Practice radiation technology and/or hold or claim to be a registered or certified radiation worker under cover of any diploma, certificate, or record illegally or fraudulently obtained, signed, or issued; or
3. Practice radiation technology without certification under this regulation; or
4. Use, in connection with his/her name any designation tending to imply that the person is a registered or certified radiation worker, without certification under this regulation; or
5. Practice radiation technology when his/her certificate is suspended or revoked; or
6. Violate these regulations in any other manner,

Shall be fined not more than \$500 for a first offense, or \$ 750 for any subsequent offense. 16 Del. C. §7416.

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## II. RADIATION HAZARDS

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The Delaware Radiation Control Regulations specify the maximum permissible dosage limits, shown in Section VII of this manual, for persons whose occupations require them to be near or proximal to radiation sources, as well as for members of the general public.

Special precautions are needed for the radiographer because the effects of radiation exposure are cumulative. However, by observing standard safety precautions that keep the radiographer well away from the x-ray beam, experience has shown that the radiographer's exposure can usually be limited to within the occupational dose limits in Part D of the State Radiation Control Regulations.

Potential hazards to the patient, which could unintentionally increase their exposure during application of medical or dental radiography, are:

- \* Excessive voltage (kVp), that will damage more deep cells than needed. Care must be taken to set the voltage appropriately for the body part.
- \* Excessive current (mA) which will cause excessive cell damage. The first symptom is usually skin burns or surface reddening. It may also cause film overexposure— a dark image with poor contrast.
- \* Excessive exposure time, which will have the same effect as excessive current.
- \* Underexposure (low current and/short time), which will produce a light, underexposed, non-diagnostic film. This requires one or more retakes, perhaps the greatest source of patient overexposure. (This is one area where “technique” and “safety” overlap.)
- \* Scattered radiation from improperly adjusted or maintained equipment, which can cause unnecessary — and often unsuspected — exposure to the patient (and also to staff members and others). Note that the intensity of scattered radiation decreases with the square of the distance, and about 1000-fold for each scattering event.

Potential hazards to the operator or third parties:

- \* Scattered radiation (see above).
- \* Holding x-ray films in place by hand while the exposure is being performed.
- \* Failure to stand behind a protective barrier several feet from the useful beam.
- \* Positioning the x-ray tube so that its primary (useful) beam is pointed at a non-shielded occupied area (such as a waiting room or clerical staff office).

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### III. OPERATING HAZARDS

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This list below is presented here from the perspective of the operator. Remember--as the operator, you must protect yourself as well as your patients. **SAFETY IS EVERYONE'S RESPONSIBILITY!**

- a. Allowing persons other than the patient to be allowed in the restricted area. (Except for mobile or portable systems, where special rules and precautions apply.)
- b. Failure of operator and other staff to be in a protected area, except for mobile or portable systems, as above. The barrier may be in a normal interior wall; distance should be at least several feet from the tube head and out of sight of the tube head.
- c. Holding films in place by hand during exposure.
- d. The holding of film by a radiation technician. If the film must be hand-held, it should be done by a relative or friend of the patient, NOT someone who routinely may be exposed to radiation. The holding person must be provided with shielding (a lead apron).
- e. Holding the tube housing or the position-indicating device by hand during exposure.
- f. Misalignment of the primary beam.
- g. Failure to accurately align the primary beam with the film or image receptor.
- h. Failure to process exposed film appropriately. (Usually, that means failure to follow the film manufacturer's recommendations, including chemical solutions and temperature control. Developing apparatus needs as much attention as the x-ray apparatus.)
- i. Using film with unnecessarily slow speed, requiring excessive exposure. The most general-hence, most important means of minimizing patient exposure is the use of the optimal film speed consistent with diagnostic quality.
- j. Malfunctioning equipment. Examples could be inadequate filtration or collimation, or a faulty timer. If an operator has ANY REASON to doubt the equipment is operating properly, they must resolve that doubt promptly by taking the problem to a technical resource or supervision.
- k. Failure to take an adequate medical/dental history, including such items as:
  - ▶ Is the patient pregnant or trying to become pregnant?
  - ▶ Has the patient had radiation therapy?
  - ▶ Are recent x-rays of the area of interest available, so that new exposures do not need to be made?

Each operator is responsible for understanding and complying with these rules and procedures, as tailored to the situation in their own workplace. Facility rules and procedures should be the first thing to be consulted by any operator who is unsure of proper procedure, because they are — when properly written — specific to their equipment and location.

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#### **IV. FEDERAL STANDARDS**

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The Consumer-Patient Radiation Health and Safety Act of 1981 (Title IX of Public Law 95-35) directs the U.S. Department of Health and Social Services to issue standards for the credentialing of individuals who perform radiologic procedures. Details are found in the Federal Register, 42CFR Part 75, published on July 12, 1985, which became final on January 13, 1986.

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## V. DELAWARE REGULATIONS

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### A. *Office of Radiation Control*

The Office of Radiation Control (ORC) of the Division of Public Health, Department of Health and Social Services, is the Delaware agency that administers the Delaware Radiation Control Regulations (DRCR) and the Radiation Technologist/Technician Certification Regulation (RTCR), acting on behalf of Delaware's Authority on Radiation Protection.

### B. *Posting Requirements*

The following items are required by regulation to be posted in every radiation machine facility:

1. Registration Certificate for a Radiation Machine Facility, Form ORC-R21, (Appendix II)
2. Notice to Employees, "Standards for Protection Against Radiation, Notices, Instructions and Reports to Workers, Inspections"
3. Any Notice(s) of Violations received by the Facility
4. Technique Chart: post at each x-ray button. (Appendix IV)
5. Warning Label (Appendix V)
6. Individual Radiation Technician/Technologist Certificate issued by the Delaware Authority on Radiation Protection

### C. *Availability of Key Information*

The Delaware Radiation Control Regulations require that the following items may be posted, but in any case must be provided in a readily accessible location for all persons using radiation machines:

1. A copy of your facility's **SAFETY RULES AND OPERATING PROCEDURES**, prepared in conformance with the ORC's "Guideline for Safety Procedure": See Appendices E, F, and G.
2. A copy of the Delaware Radiation Control Regulations provided at time of registration.
3. All information required by DRCR shall be available and kept current. See Appendix VIII.



4. Each facility must have a written policy for evaluating the exposure to individuals in instances where the examination is not specified in its technique chart, or where the patient and/or the film is supported by a human holder.

In addition, you should keep a copy of the Radiation Technologist/Technician Certification Regulation (RTCR), available on the ORC webpage (see pg. 33 for link).

D. *Monitoring Requirements (Title 16 Delaware Administrative Code 4465, Part D)*

Conditions Requiring Individual Monitoring of Occupational Dose:

Each registered facility shall monitor exposures from sources of radiation at levels sufficient to demonstrate compliance with the radiation dose limits established in Part D, Section 17.0. A selected excerpt of dose limits is provided below — see the radiation control regulations, Part D, for complete information.

<u>Specific Reference</u>	<u>Maximum Permissible Doses*</u>
Adults likely to receive in 1 year from external sources, a dose > 10% of the Occupational dose limits (Part D.6.0)	Whole body (TEDE) 0.05 Sievert (5 rem/5000 mrem) Skin/Extremities (Shallow DE) 0.15 Sievert (15rem/15,000 mrem)
Declared Pregnant Radiation Workers** Dose to embryo/fetus for gestation (Part D.12.0)	5 milliSievert (500 mrem)
Individual Members of General Public In 1 year from external doses (Part D.13.0)	1 milliSievert (100 mrem)

\* Note that mrem denotes dose in millirem, with equivalent given in Sieverts or milliSieverts (Standard Internationale, or SI units). One Rem = 1000 millirem. One Sievert = 1000 milliSieverts

\*\* See Appendix C of this document for a Delaware Sample Letter for Declaring Pregnancy.

D. *Equipment Registration and Inspection*

The Delaware Radiation Control Regulations, Part B, requires registration of all radiation source facilities with the ORC. Important requirements of this regulation are summarized as follows:

1. If equipment is added to or deleted from this facility, the registration must be updated and amended.
2. New equipment requiring a shielding plan review should not be placed in service until the ORC has inspected the equipment and accepted the manner in which it has been installed.

3. A Radiation Technologist/Technician must be present to operate the equipment during any ORC inspection, and to demonstrate familiarity with the safety rules and with the operating procedures.

*E. Assessment of Procedures*

During periodic ORC inspections of radiation facilities, procedures, and techniques will be evaluated and rated by ORC inspectors, along with the positioning, safety, and operability of the equipment itself.

**APPENDIX A**

**OFFICE OF RADIATION CONTROL**

NOTICE OF  
**REGISTRATION**  
NON-TRANSFERABLE

**EXPIRATION DATE: 07/31/2020**

**EFFECTIVE: 08/01/2015**

**REGISTRATION NO: 1234**

**JOHN DOE  
123 MAIN STREET  
WILMINGTON, DE 19800**

**ATTN: RADIATION SAFETY OFFICER**

PURSUANT TO THE RADIATION CONTROL ACT,  
16 DEL.C., CHAPTER 74 AS AMENDED, THE DELAWARE  
RADIATION CONTROL REGULATIONS, AND A DULY-  
FILED APPLICATION, REGISTRATION IS HEREBY  
ISSUED TO THE REGISTRANT DESIGNATED ABOVE.  
THIS REGISTRATION IS HEREBY MADE PUBLIC AND IS  
SUBJECT TO ALL APPLICABLE RULES, REGISTRATIONS,  
ORDERS, AND NOTICES NOW OR HEREAFTER IN EFFECT.

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Director  
Division of Public Health

**POST IN A CONSPICUOUS PLACE  
FOR PUBLIC VIEW**

Form ORC-R21



# NOTICE TO EMPLOYEES AGENCY FORM X

In Part D of the Delaware Radiation Control Regulations, the Authority on Radiation has established standards for your protection against radiation hazards. In Part J of the Delaware Radiation Control Regulations, the Authority on Radiation Protection has established certain provisions for the options of workers engaged in work under an agency license or registration.

**The Registrant is required to:**

1. Apply these regulations to work involving sources of radiation.
2. Post or otherwise make available to you a copy of the Delaware Radiation Control Regulations, and the operating procedures which apply to work you are engaged in, and explain their provisions to you.
3. Post Notices of Violation issued to your employer involving radiological working conditions, and any proposed imposition of administrative penalties and orders.

**Your Responsibility as a worker:**

You should familiarize yourself with provisions of the Delaware Radiation Control Regulations listed below and facility procedures for safe operation of radiation sources in your workplace. You should observe these provisions for your own protection, and the protection of your co-workers.

**What is covered by these regulations**

1. Limits on exposure to radiation and radioactive material in restricted and unrestricted areas;
2. Measures to be taken after accidental exposure;
3. Personnel monitoring, surveys and equipment;
4. Caution signs, labels, and safety interlock equipment;
5. Exposure records and reports;
6. Options for workers regarding Agency inspections; and
7. Related matters

**Reports on your radiation exposure history**

1. The Delaware Radiation Control Regulations require that the registrant give you a written report if you receive an exposure in excess of any applicable limit set forth in these regulations. The basic limits for exposure to workers are set forth in Sections D.1101, D.1201, D.1202, D.1203, D.1204 and D.1208 of the regulations. If personnel monitoring is required for your job, and if you request information on your radiation exposure;
  - a. The registrant or your employer/supervisor must advise you annually of your exposure to radiation while you are working, as set forth in Section J.4.0;
  - b. The registrant or your employer/supervisor must give you a written report of your radiation exposures upon leaving work in the registered facility as set forth in Section J.4.0.
- 2.

**INSPECTIONS**

**All licensed or registered activities are subject to inspection by a representative of the Office of Radiation Control. In addition, any worker or representative of workers who believes that there is a violation of the Delaware Radiation Control Act, the regulations issued thereunder, or the terms of the facility license or registration with regard to radiological working conditions in which the worker is engaged, may request an inspection by sending a notice to the Office of Radiation**

**Control. The written request must set forth the specific grounds for the notice, and must be signed by the worker as the representative of the workers. During inspections, Agency inspectors may confer privately with workers, and any worker may bring to the attention of the inspectors any past or present condition which they believe contributed to or caused any violation as described above.**



**Delaware Sample Letter for Declaring Pregnancy**  
*(Print legibly all entries)*

**CONFIDENTIAL HEALTH INFORMATION**

**DATE:** \_\_\_\_\_  
(Specify Date)

**TO:** Radiation Safety Officer  
  
\_\_\_\_\_  
(Your Employer Facility Name)

\_\_\_\_\_  
(Your Employer Facility Address)

**FROM:** \_\_\_\_\_  
(Your Name)

\_\_\_\_\_  
(Your Department)

\_\_\_\_\_  
(Your Inter-Office Mailing Address)

\_\_\_\_\_  
(Your Work Phone No.)

**SUBJECT: Declaration of Pregnancy**

In accordance with Delaware Administrative Code 4465, Delaware Radiation Control Regulations Sec.D.12.0 "Dose equivalent to an Embryo/Fetus", I am declaring that I am (or suspect I am) pregnant.

I believe that I became pregnant in the month of \_\_\_\_\_ of \_\_\_\_\_  
(month) (year)

I understand that the radiation dose to my embryo/fetus during my entire pregnancy will not be allowed to exceed 5 millisievert (0.5 rem, or 500 millirems) unless that dose has already been exceeded between the time of conception and the submission of this letter. I understand that meeting the lower dose limit may require a change in job or job responsibilities during my pregnancy. I also understand that this declaration and my dose history will be reviewed by the Radiation Safety Officer and/or their staff and that the recommended or required changes in my job or job responsibilities during my pregnancy may result from that review. Finally, I understand that I may undeclare my pregnancy at any time by informing the Radiation Safety Officer in writing.

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<b>Employee Signature</b>	<b>Employee Printed Name</b>	<b>Date</b>
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<b>Employer Representative Signature</b>	<b>Employer Representative Printed Name</b>	<b>Date</b>
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CANNON BUILDING  
861 SILVER LAKE BLVD., SUITE 203  
DOVER, DELAWARE 19904-2467

STATE OF DELAWARE

TELEPHONE: (302) 744-4500  
FAX: (302) 739-2711  
WEBSITE: [DPR.DELAWARE.GOV](http://DPR.DELAWARE.GOV)  
EMAIL: [customerservice.dpr@state.de.us](mailto:customerservice.dpr@state.de.us)

**REQUEST FOR EXEMPTION FROM SOCIAL SECURITY NUMBER REQUIREMENT**

**INSTRUCTIONS**

**Section 7 of the Privacy Act of 1974 requires the following information to be given to all applicants:** Applicants for any Delaware professional or occupational license, permit, registration or certificate (other than Gaming permits) are required to provide a United States Social Security Number (SSN) (29 Del. C. §8735(m)). The Division of Professional Regulation uses the SSN primarily to verify identity and safeguard personal information. It may also be used to enforce child support obligation (13 Del. C. §2216) and for other lawful purposes. However, the Division may issue a license to an applicant who does not have a SSN **if the applicant submits this form attesting that he or she has not been assigned an SSN.** If a person who has been issued a Delaware license without an SSN is later assigned an SSN, the person must report the SSN to the Delaware Division of Professional Regulation as a requirement for license renewal.

1. Name: \_\_\_\_\_  
Last /Family First Middle

2. Mailing Address: \_\_\_\_\_  
Street  
\_\_\_\_\_  
City State/Province/Country Zip/Postal Code

3. Check one:  
 I am applying for Delaware licensure as a \_\_\_\_\_  
 I hold a Delaware license as a \_\_\_\_\_ License Number: \_\_\_\_\_

4. I certify that I have not been assigned a U.S. Social Security Number. Yes  No

5. If a U.S. SSN is assigned to you, do you agree to report the SSN to the Delaware Division of Professional Regulation? Yes  No

**AFFIDAVIT**

I state under penalty of perjury in the second degree, a Class F felony, as defined in 11 Del C. §1222, that the information contained herein is true and correct to the best of my knowledge. I understand that, under Delaware law, providing false information is grounds for denial, suspension, or revocation of a professional or occupational license, certificate or permit. I, \_\_\_\_\_, being first sworn, depose, and state under oath that the above information is true.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

***This form must be notarized below.***

State of \_\_\_\_\_ County of \_\_\_\_\_

SUBSCRIBED AND SWORN TO me before this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

Notary Public \_\_\_\_\_

SEAL

My commission expires: \_\_\_\_\_

DELAWARE DIVISION OF PUBLIC HEALTH  
OFFICE OF RADIATION CONTROL  
**GUIDELINES FOR SAFETY PROCEDURES DENTAL FACILITIES**

I. Introduction

The model procedures in this regulatory guide are generalized and must be made specific for each facility. Specific procedures must be in place for every facility which has been granted a variance for use of hand-held intra-oral x-ray devices, as a condition of their registration permit. Registrants must thoroughly review their written procedures since they will be held to the stipulations of their safety rules and operating procedures by Delaware Radiation Control Regulations (DRCR). These procedures must be posted or provided to all persons using the radiation machines.

II. Safety Rules and Operating Procedures

These instructions are provided to you in accordance with DRCR F.3.1.4. The intent of this guide is to minimize radiation exposure of x-ray personnel and patients without interfering with the practice of the healing arts.

A. All x-ray examinations and retakes shall be ordered by  
(Name of Doctor) \_\_\_\_\_ (DRCR F.3.1.7).

B. Operation of X-Ray Equipment

1. A restricted area is to be maintained by the operator. The restricted area is the room in which the x-ray equipment is located. The only person allowed in the restricted area is the subject to be x-rayed (except for mobile or portable systems).
2. During each exposure: (DRCR F.7.2)
  - (a) employees shall stand in a protected area;
  - or
  - (b) employees shall stand outside the exposure room;
3. Neither the dentist nor any employee should hold patients or films during exposures. If an individual must be used for the purpose of holding films or a patient, appropriate protective devices (lead gloves, apron, etc.) shall be used. (DRCR F.3.1.8.6)
4. Neither the tube housing nor the Position Indicating Device (PID) shall be hand held during any exposure. (DRCR F.7.5.2)

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\*These Guides are issued to describe and make available to the public acceptable methods of implementing specific parts of Delaware Radiation Control Regulations. The Guides are not substitutes for regulations, and compliance with them is not required; however, other acceptable methods or solutions shall be available.

5. The primary beam shall be aligned with the film by utilizing the spacer = (cone) frame or "PID". (DRCR F.6.8)
6. The film manufacturer's recommendations, including maintenance of the developing solutions at a constant temperature, shall be used for processing film, (Paragraph 2.4.7, NCRP 33.) (This is not a regulatory requirement, but is a statement of accepted good practice to keep patient exposure to a minimum consistent with good diagnostic films.)

C. Personnel Monitoring

1. Where personnel monitoring equipment is provided for each individual who uses or operates any radiation producing machine, each employee shall wear his/her assigned monitor. These devices are to remain in the office when not in use and stored away from radiation. The control badge, when one is supplied shall be kept in an area free of radiation. (Name of individual) is responsible for maintaining exposure records and exchanging personnel monitors on a prearranged schedule. Exposure records will be kept (location). Exposure records will be made available to individuals who use or operate any radiation producing machines upon request. (DRCR D.1107a & J.13.b)
2. No adult employee shall be allowed to receive radiation exposure in excess of 5 rem per calendar year. (DRCR D.201). No employee under the age of 18 shall be allowed to receive radiation exposure in excess of 125 millirem per calendar quarter. (DRCR D.207). In the event of radiation incident or an excessive exposure, the Office of Radiation Control shall be notified. The address is: Delaware Division of Public Health, Office of Radiation Control, 417 Federal Street, Dover, Delaware 19901. The telephone number is 302-744-4546.

D. A copy of Delaware Radiation Control Regulations is available [www.dhss.delaware.gov/dhss/dph/hsp/orc.html](http://www.dhss.delaware.gov/dhss/dph/hsp/orc.html) and operators shall be familiar with pertinent sections of parts A, B, D, F, and J. (DRCR J.12).

E. The x-ray machines are equipped with devices to limit the radiation exposure to patients and employees; these devices include filters which reduce unnecessary low-energy radiation from the primary beam and collimators which restrict the size of the x-ray beam. (DRCR F.4.0 and F.6.0). Employees shall not alter, remove, tamper with, or in any way defeat these devices.

F. For offices using cephalometric, Panographic and Cone Beam CT units, the following statement should be included:

For units listed para. F above, the useful beam shall be confined to the area of clinical interest or to the size of the film used. (DRCR F.6.8).



DELAWARE DIVISION OF PUBLIC HEALTH  
OFFICE OF RADIATION CONTROL  
**GUIDELINE FOR SAFETY PROCEDURES MEDICAL FACILITIES**

I. Introduction

The model procedures in this regulatory guide are generalized and must be made specific for each facility. Registrants must thoroughly review their written procedures since they will be held to the stipulations of their safety rules and operating procedures by Delaware Radiation Control Regulations (DRCR). These procedures must be posted or provided to all persons using the radiation machines.

Procedures should be signed and dated on the last page.

II. Safety Rules and Operating Procedures

SAFETY RULES AND OPERATING PROCEDURES  
FOR \_\_\_\_\_

These instructions are provided to you in accordance with DRCR F.3.1.4. The intent of this guide is to minimize radiation exposure of x-ray personnel and patients without interfering with the practice of the diagnostic quality.

A. All x-ray examinations shall be ordered by

(Name of doctor) \_\_\_\_\_ (DRCR F.3.1.7).

B. "Retakes" shall be ordered by (Name of doctor) \_\_\_\_\_ DRCR F.3.1.7.

C. Operation of X-Ray Equipment

1. A restricted area is to be maintained by the operator using "Caution Radiation Area" signs and/or other methods designated by the registrant. (Area(s) to be specified by the registrant and inserted at this point.) (DRCR D.902(a).
2. During each exposure, operators shall stand behind a protective barrier or have protective aprons. (DRCR F.3.1.5).
3. The useful beam shall be restricted to the area of clinical interest or to the size of film used. (DRCR F.6.27).
4. The useful beam shall be aligned with the film by using the (specify technique). (DRCR F.6.7.1).
5. A technique chart which gives the appropriate exposure factors (mA, kVp, time, etc.) shall be provided near the control panel. (DRCR F.3.1.3).
6. When a patient must be held in position for radiography, mechanical supporting and restraining devices should be used. If the patient must be held by an individual, that individual shall be protected with appropriate shielding devices such as protective gloves and apron, and shall be so positioned that no part of his/her body will be struck by the useful beam unless protected by 0.5 mm lead equivalent. (DRCR F.3.1.8.5).  
  
In no case shall a pregnant female be used for the purpose of holding or restraining a patient. (This is not a regulation, but every effort should be made to avoid unnecessary exposure of the fetus.)
7. Except when it interferes with the area of clinical interest, gonadal shields with a minimum of 0.25 millimeters lead equivalence shall be used. This applies to adults of childbearing age and all children. (DRCR F.3.1.6).
8. The film manufacturer's recommendations, including maintenance of the developing solutions at a constant temperature, shall be used for processing film, (Paragraph 2.4.7, NCRP 33.) (This is not a regulatory requirement, but is a statement of accepted good practice to keep patient exposure to a minimum consistent with good diagnostic films.)

D. Personnel Monitoring

1. Personnel monitoring equipment is provided for each individual who uses or operates any radiation producing machine. (DRCR D.502. Each employee shall wear his/her assigned monitor. The devices are to remain (location) \_\_\_\_\_ when not in use. The control badge (when it is supplied) shall be placed in an area free of radiation. (Name of individual) is responsible for maintaining exposure records and exchanging personnel monitors on a prearranged schedule. Exposure records will be kept (location) \_\_\_\_\_. Exposure records will be made available to occupationally exposed individuals upon request. (DRCR D.1107a & J.13.b).
2. No adult employee shall be allowed to receive whole body radiation exposure in excess of 5 rem per calendar year. (DRCR D.201). No employee under the age of 18 shall be allowed to receive radiation exposure in excess of 125 millirem per calendar quarter. (DRCR D.207). In the event of radiation incident or an excessive exposure, the Office of Radiation Control shall be notified. The address is: Delaware Division of Public Health, Office of Radiation Control, 417 Federal Street, Dover, Delaware 19901. The telephone number is 302-744-4546.

E. A copy of Delaware Radiation Control Regulations is available on-line and operators shall be familiar with pertinent sections of parts A, B, D, F and J. (DRCR J.12).  
[www.dhss.delaware.gov/dhss/dph/hsp/orc.html](http://www.dhss.delaware.gov/dhss/dph/hsp/orc.html)

F. The x-ray equipment in this facility was installed following the manufacturer's specifications. The equipment has appropriate collimation which, if used properly, will limit the size of the useful beam to the area of clinical interest. In addition, this equipment has aluminum or equivalent filtration which will remove unnecessary low-energy radiation from the x-ray beam and shall not be removed or altered except for mammography. (DRCR F.4.0 and F.6.0).

H. Mobile Procedures (If Applicable)

1. The operator shall stand behind a protective shield, or at least nine feet from the patient and well away from the useful beam. If a protective shield is not used, the operator shall wear a lead apron. (DRCR F.3.1.5.2 & F.6.28.3.2.2).
2. The useful beam shall not be directed toward other patients that may be present in the room. Other patients should not be located closer than 2 meters from the tube head. (DRCR F.3.1.5).

DELAWARE DIVISION OF  
PUBLIC HEALTH OFFICE OF  
RADIATION CONTROL  
**GUIDELINE FOR SAFETY PROCEDURES VETERINARY  
FACILITIES**

I. Introduction

The model procedures in this regulatory guide are generalized and must be made specific for each facility. Specific procedures must be in place for every facility utilizing hand-held intra-oral x-ray devices, as a condition of their registration permit. Registrants must thoroughly review their written procedures since they will be held to the stipulations of their safety rules and operating procedures by Delaware Radiation Control Regulations (DRCR). These procedures must be posted or provided to all persons using the radiation machines.

Procedures should be signed and dated on the last page.

II. Safety Rules and Operating Procedures

These instructions are provided to you in accordance with DRCR F.3.1.4. The intent of this guide is to minimize radiation exposure of x-ray personnel without sacrifice of diagnostic quality.

A. All x-ray examinations shall be ordered by  
(Name of veterinarian)\_\_\_\_\_ (DRCR F.3.1.7).

B. Operation of X-Ray Equipment

1. A restricted area is to be maintained by the operator using "Caution Radiation Area" signs and/or other methods designated by the registrant. (Area(s) to be specified by the registrant and inserted at this point.)  
DRCR D.902(a)
2. No individual other than the operator shall be in the x-ray room while exposures are being made unless such individual's assistance is required. DRCR F.3.1.5
3. In any application in which the operator and other assisting individual are not located behind a protective barrier, a protective apron having a lead equivalent of not less than 0.5 millimeter shall be worn by individuals in the room during exposures. DRCR F.3.1.5.1
4. The useful beam shall be restricted to the area of clinical interest or to the size of film used. DRCR F.6.27
5. The primary beam shall be aligned with the film by using the (specify technique) F.6.7.1
6. When an animal must be held in position for

radiography, mechanical supporting and restraining devices should be used. If an animal must be held by an individual, that individual shall be protected with appropriate shielding devices such as protective gloves and apron, and shall be so positioned that no part of their body will be struck by the useful beam. DRCR F.3.1.8.5

In no case should a pregnant female be used for the purpose of holding or restraining an animal. (This is not a regulation, but every effort should be made to avoid unnecessary exposure of the fetus.)

7. The film manufacturer's recommendations, including maintenance of the developing solutions at a constant temperature, shall be used for processing film.

(Paragraph 2.4.7, NCRP 33) (This is not a regulatory requirement, but is a statement of accepted good practice to keep exposure to a minimum consistent with good diagnostic films.)

C. Personnel Monitoring

1. Personnel monitoring equipment is provided for each individual who uses or operates any radiation producing machine. Each employee shall wear his/her assigned monitor. The devices are to remain (location)\_\_\_\_\_

The control badge, when one is supplied shall be kept in an area free of radiation. (Name of individual)\_\_\_\_\_ is responsible for maintaining exposure records and exchanging personnel monitors on a prearranged schedule. Exposure records will be kept (location)\_\_\_\_\_ Exposure records will be made available to occupationally exposed individuals upon request. DRCR D.502 & D.1107a & J.13.b

2. No adult employee shall be allowed to receive whole body radiation exposure in excess of 5 rem per calendar year. (DRCR D.201). In the event of radiation incident or an excessive exposure, the Office of Radiation Control shall be notified. The address is: Delaware Division of Public Health, Office of Radiation Control, 417 Federal Street, Dover, Delaware 19901. The telephone number is 302-744-4546.

- D. A copy of Delaware Radiation Control Regulations is available [www.dhss.delaware.gov/dhss/dph/hsp/orc.html](http://www.dhss.delaware.gov/dhss/dph/hsp/orc.html) and operators shall be familiar with pertinent sections of parts A, B, D, F, and J. (DRCR J.12).

- E. The x-ray equipment in this facility was installed following the manufacturer's specifications, and is equipped with appropriate collimation which, if used properly, will limit the size of the useful beam to the area of clinical interest. In addition, this equipment has aluminum or equivalent filtration which will remove unnecessary low-energy radiation from the x-ray beam and shall not be removed or altered except when contraindicated for a particular radiographic purpose. DRCR F.4.0 & F.6.0

F. Mobile Procedures (if applicable)

- I. The operator shall stand behind a protective shield, or at least nine feet from the patient and well away from the useful beam. If a protective shield is not used, the operator shall wear a lead apron. (DRCR F.3.1.5.2).

2. The useful beam shall not be directed toward other patients that may be present in the room. Other patients should not be located closer than 2 meters from the tube head. (DRCR F.3.1.5).

## APPENDIX H

### DELAWARE RADIATION CONTROL REGULATIONS PART F

#### Information and Maintenance Record and Associated Information.

The registrant shall maintain the following information for each x-ray system for inspection by the Agency:

- (i) Maximum rating of technique factors;
- (ii) model and serial numbers of all certifiable components;
- (iii) aluminum equivalent filtration of the useful beam, including any routine variation;
- (iv) tube rating charts and cooling curves;
- (v) records of surveys, calibrations, maintenance, and modifications performed on the x-ray system(s) with the names of persons who performed such services;
- (vi) a scale drawing of the room in which a stationary x-ray system is located with such drawing indicating the use of areas adjacent to the room and an estimation of the extent of occupancy by an individual in such areas. In addition, the drawing shall include:
  - (a) The results of a survey for radiation levels present at the operator's position and at pertinent points outside the room at specified test conditions, or
  - (b) the type and thickness of materials, or lead equivalency, of each protective barrier; and
- (vii) a copy of all correspondence with this Agency regarding that x-ray system.

## APPENDIX I

### NATIONAL CREDENTIALING ORGANIZATIONS RECOGNIZED FOR DELAWARE CERTIFICATION

1. American Registry of Radiologic Technologists (ARRT)
2. Dental Assisting National Board Certified Dental Assistant (CDA) Examination
3. Dental Assisting National Board Radiation Health and Safety (RHS) Examination
4. Nuclear Medicine Technologist Certification Board (NMTCB)
5. Cardiovascular Credentialing International (CCI)
6. International Society of Clinical Densitometry (ISCD)

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**DEFINITIONS**


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<b>AGENCY</b>	The administrative agent of the Authority on Radiation Protection; i.e., the Office of Radiation Control, Division of Public Health, Delaware Department of Health and Social Services.
<b>ARRT</b>	American Registry of Radiologic Technologists
<b>AUTHORITY</b>	Delaware's Authority on Radiation Protection as specified by 16 <u>Del. Code</u> 7404.
<b>CCI</b>	Cardiovascular Credentialing International
<b>CERTIFICATE</b>	A document issued by the Agency recognizing the successful completion of an Authority-approved Certification Examination. Unless otherwise specified, a "certificate" allows practice of Radiation Technology to the level of examination passed. A "temporary certificate" may be issued under certain circumstances.
<b>DANB CDA</b>	Dental Assisting National Board Certified Dental Assistant (CDA) Examination
<b>DANB RHS</b>	Dental Assisting National Board Radiation Health and Safety (RHS) Examination
<b>DENTAL TECHNICIAN</b>	An individual who is certified to perform Dental Radiography.
<b>DENTAL HYGIENIST</b>	An individual with formal training in dental hygiene, including application of dental x-rays, licensed by the Delaware Board of Dental Examiners.
<b>DETECTORS</b>	The sensors, cells, or chambers within an AEC device that sense how much radiation has reached the imaging plate in order to terminate the exposure.
<b>DENTAL RADIOGRAPHER</b>	An individual who applies radiation to humans for diagnostic purposes in dentistry. This category includes both Dental Assistants and Dental Hygienists.
<b>FILM BADGE or DOSIMETER</b>	A recording device worn to record an individual's cumulative exposure to ionizing radiation.



<b>IMAGE PLATE</b>	Located in the CR image receptor, where the photon intensities are absorbed by the phosphor.
<b>IMAGE RECEPTOR (IR)</b>	A device that receives the radiation leaving the patient.
<b>ISCD</b>	International Society of Clinical Densitometry
<b>LICENSED PRACTITIONER</b>	An individual licensed to practice medicine, dentistry, podiatry, chiropractic, or osteopathy in Delaware. In other words, any individual licensed to prescribe therapeutic or diagnostic radiation for human patients. In addition, this category includes dental hygienists who cannot prescribe radiation.
<b>NMTCB</b>	Nuclear Medicine Technologist Certification Board
<b>RADIATION</b>	Used for medical and dental imaging. Ionizing radiation can cause cells to mutate and must be used carefully.
<b>RADIATION EXPOSURE</b>	The process of being struck by radiation, either primary or secondary.
<b>RADIATION TECHNICIAN</b>	Section IV, M, of the Radiation Technologist/Technician Certification Regulation – refers to any individual who has not graduated from a JRCERT-approved or CODA program in radiation technology, but has passed a Delaware-approved examination.
<b>RADIATION TECHNOLOGIST</b>	Any individual who is a dental hygienist, a medical radiographer, a nuclear medicine technologist, or a Radiation Therapy Technologist who has completed an approved program and is nationally credentialed.
<b>RADIOGRAPH</b>	An x-ray film containing an image of an anatomical part.
<b>SHIELDING</b>	Preventing or hindering the passage of radiation, by use of one or more barriers that attenuate the x-rays. Lead aprons, leaded walls, collimation are all forms of shielding. Patients should have gonadal shielding applied before any radiation that may expose the gonadal region.
<b>TECHNIQUE</b>	Term used to define the exposure to the patient based on mA, time, and kVp used to make the radiograph.

**TOTAL  
EFFECTIVE  
DOSE  
EQUIVALENT  
(TEDE)**

The radiation dosage that describes the effect of an exposure on the entire body of the person. TEDE means the sum of the deep dose equivalent for external exposures and the committed dose equivalent for internal exposures.

**USEFUL BEAM**

The part of the primary radiation that goes where it is aimed and exposes the patient.

**X-RAYS**

Penetrating electromagnetic radiation. X-rays travel in a straight line from the source and are invisible.

Applicants may obtain information from the following office:

Delaware Division of Public Health  
Office of Radiation Control  
417 Federal Street  
Dover, Delaware 19901

Telephone 302-744-4546  
Fax 302-739-3839

All ORC Application Forms and Instructions are posted on the following web site(s):

<http://www.dhss.delaware.gov/dhss/dph/hsp/orc.html>

OR

*Enter "office of radiation control" in an internet search engine  
and click on Office of Radiation Control link*