

The American Board of Radiology

Diagnostic Radiology

Radiation Oncology

Radiologic Physics



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August 10, 2005

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U.S. Nuclear Regulatory Commission

ATTN: Mr. Thomas Essig, Chief

Materials Safety and Inspection Branch (MS T8F3)

11545 Rockville Pike

Rockville, MD 20852

Re: Request for Recognized Status for the American Board of Radiology (ABR) in Radiologic Physics

Dear Mr. Essig:

The ABR is officially requesting recognized status for its certifications in Radiologic-Physics and the subspecialties of Diagnostic Radiologic Physics, Therapeutic Radiologic-Physics, and Medical Nuclear Physics, in accordance with 10 CFR §§ 35.50 and 35.51 as referenced in the U.S. Nuclear Regulatory Commission's (NRC) letter dated April 4, 2005. The ABR has certified radiologic (medical) physicists for well over 50 years, and is proud of the exemplary record that ABR-certified physicists have compiled in the service of patients and personnel exposed to radiation for medical purposes.

Background:

The ABR certifies radiologic (medical) physicists to practice radiologic physics in North America. Certificates are issued to candidates who have demonstrated knowledge and proficiency in radiological physics by accumulating practical experience and successfully completing comprehensive written and oral examinations designed and administered by their peers. Three primary certificates are granted by the ABR that encompass Diagnostic Radiologic Physics, Therapeutic Radiological Physics, and Medical Nuclear Physics. Each of these certification processes requires candidates to exhibit extensive fundamental and practical knowledge and experience in radiation physics, protection and safety.

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A Member Board of The American Board of Medical Specialties (ABMS)

Eligibility for admission to the ABR certification process requires an undergraduate background in physics or a related science or engineering specialty, a graduate degree in medical physics or related field, and 3 years of experience in the discipline for which certification is desired, as attested to by an ABR-certified physicist and an ABR-certified physician. To ensure that applicants meet the education and experience requirements for certification eligibility, all applications are carefully reviewed by ABR staff and by a committee composed of the three physics trustees of the ABR.

Before 2002, certificates in radiologic physics were granted for a lifetime. Beginning in 2002, time-limited certificates have been granted for a period of 10 years, and may be renewed at the end of the period through completion of the ABR's Maintenance of Certification (MOC) program. This program is designed in conformity with the MOC guidelines of the American Board of Medical Specialties (ABMS), and addresses four components (Professional Standing, Lifelong Learning and Self-Assessment, Cognitive Expertise, and Practice Performance) and six competencies (Medical Knowledge, Patient Care, Interpersonal & Communication Skills, Professionalism, Practice-Based Learning and Improvement, and Systems-Based Practice). Integrated throughout these components and competencies are expectations of documented expertise in the areas of radiation protection and safety.

In addition to the above categories of certificates in radiologic physics, the ABR previously offered certification in the broad category of Radiologic Physics. These certifications were issued as lifetime certificates, and are still valid for the slowly-diminishing group of practicing physicists who hold them. Persons holding these certificates have demonstrated a thorough understanding of the principles and procedures of radiation protection and safety as they pertain to a wide spectrum of radiation sources and applications.

A description of certifications in radiological physics offered by the ABR is available on the organization's web site (www.theabr.org).

10 CFR § 35.50, *Training for Radiation Safety Officer.*

Physicists certified in Diagnostic Radiologic Physics, Therapeutic Radiologic Physics, Medical Nuclear Physics, and Radiologic Physics by the ABR meet the requirements of the NRC as delineated in § 35.50 to serve as Radiation Safety Officer (RSO) at both specific and broad scope medical facilities.¹ Individuals certified in these specialties have

¹ In the past, the ABR offered combined certifications (Diagnostic Radiologic Physics and Medical Nuclear Physics, Diagnostic Radiologic Physics and Therapeutic Radiologic Physics, and Therapeutic Radiologic Physics and Medical Nuclear Physics) to individuals who had appropriate credentials and who were examined to practice in two fields. Persons with these certifications are eligible to serve as a Radiation Safety Officer.

substantial experience in radiation physics, protection and safety, and have demonstrated both fundamental and applied knowledge in these areas through an examination process conducted by the ABR. The examination consists of both a written examination compiled by experienced, ABR-certified radiologic physicists, and an oral examination conducted one-on-one between the candidates and experienced physicists.

The written examination in the subspecialties of radiologic physics consists of two parts. The first part, taken by all candidates for certification and consisting of 125 questions, includes 50 questions in biological and clinical physics, and 75 questions in fundamental topics important to all subspecialties of radiologic physics. Many of the questions in both categories address specific topics related to radiation safety and protection, and all are related in some fashion to these topics. The questions cover topics such as atomic and nuclear principles, sources of radiation (machine-generated and both sealed and unsealed radionuclides), interactions of radiation in general and in tissues, radiation units, radiation measurements, radiation protection principles, radiation shielding design, dose calculations, radiation protection guidelines and regulations, emergency procedures, radiation biology (traditional and molecular), radiation effects, and estimation of radiation risks. The questions in this part of the exam cover general principles and applications of radiation protection and safety that are applicable to all subspecialties of radiologic physics, including protection and safety aspects of low and high energy xrays, and sealed and unsealed radioactive sources of various activity levels.

The second part of the examination, consisting of 75 questions, examines the candidate's theoretical and practical knowledge in one of the subspecialties of radiologic physics. These questions also include substantial coverage of radiation protection and safety, especially as it pertains to the applications of radiation in the particular subspecialty. The questions cover issues related to protection of patients and working personnel from radiation, and examine the candidate's ability to make judgments and optimize procedures in order to enhance the benefits and minimize the risks of medical radiation exposures.

Candidates who successfully pass both parts of the written examination are eligible to be examined orally as the next step in their path to certification. The oral examination consists of 5 questions in each of 5 categories [(1. Protection and Patient Safety (encompasses Radiation Protection and Safety); 2. Patient Related Measurements (encompasses Radiation Measurements); 3. Image Acquisition, Processing and Display (encompasses Medical Imaging); 4. Calibration, Quality Control and Quality Assurance (encompasses Radiation Dose); 5. Equipment] for a total of 25 questions. The oral examination focuses on practical knowledge as an index to the candidate's actual experience in using radiation safely and effectively in medicine. Candidates who pass the oral examination are granted a certificate in their chosen subspecialty of radiologic physics.

In past years, an independent certification board, the American Board of Medical Physics (ABMP), examined candidates in diagnostic radiologic physics and therapeutic radiologic physics in competition with the ABR. In 2002, the ABMP ceased admitting physicists into candidacy for these examinations, and instead encouraged candidates to apply for

certification through the ABR. Candidates who were partway through the ABMP certification process were allowed to continue, and in July, 2005, the last of these candidates were examined orally by the ABMP in diagnostic radiologic physics or therapeutic radiologic physics. The certification process provided by the ABMP was deemed by the ABR to be similar in content and rigor to the ABR's certification process, and persons certified by the ABMP were permitted to request a Letter of Certification Equivalence from the ABR. This letter signifies that the ABMP certification held by the possessor of the letter is equivalent to ABR certification in the particular specialty. ABMP-certified physicists with a letter of equivalence are encouraged to engage in the MOC process offered by the ABR, and will have until 2006 to declare their interest. Once these candidates have completed the 10-year MOC process, they will be granted an ABR certificate in their specialty.

1. 10 CFR § 35.51, *Training for Authorized Medical Physicist.*

The following ABR certificates should be recognized for Authorized Medical Physicist status:

Therapeutic Radiologic Physics
Radiological Physics

Physicists holding one of these certifications² have experience and expertise in the therapeutic applications of radiation originating from external and internal sources, electron and photon external beam therapy (low and high energy (> 1MeV)), intensity-modulated radiation therapy (IMRT), brachytherapy (sealed and unsealed sources), intraoperative radiation therapy, stereotactic radiosurgery, gamma-knife therapy, and other techniques for cancer treatment with radiation. Experience must include:

- (i) performing sealed source leak tests and inventories;
- (ii) performing decay corrections;
- (iii) performing full calibration and periodic spot checks of external beam treatment units, stereotactic radiosurgery units, and remote afterloading units as applicable; and
- (iv) conducting radiation surveys around external beam treatment units, stereotactic radiosurgery units, and remote afterloading units as applicable.

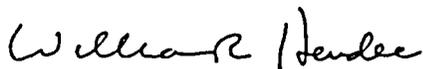
² In the past, the ABR offered combined certifications (Diagnostic Radiologic Physics and Therapeutic Radiologic Physics, and Therapeutic Radiologic Physics and Medical Nuclear Physics) to individuals who had appropriate credentials and who were examined to practice in two fields. Persons with these certifications are eligible to practice as an Authorized Medical Physicist.

Part 2 of the written examination for these individuals, as well as the oral examination, explore the level of knowledge and experience of the candidates in these areas of specialization. Included in this exploration are extensive coverage of radiation safety and protection principles, and examination of the candidates' ability to make good judgments in clinical and safety situations. Dosimetry, calibration, treatment planning, sealed source safety measures and inventory control, afterloading devices, decay corrections, radiation surveys, quality control, radiation safety and protection practices, and risk estimates are also included in the examination.

Physicists certified by the ABMP in therapeutic radiologic physics, and possessing a Letter of Certification Equivalence from the ABR, are considered to be equivalent to ABR-certified physicists in therapeutic radiologic physics.

ABR is prepared to meet with you to discuss any questions you may have regarding the granting of recognized status for persons holding the ABR certifications described above. The American Board of Radiology looks forward to your response to this letter.

Sincerely,



William R. Hendee, PhD



Robert. R. Hattery, MD
Executive Director