



Certification Board of Nuclear Endocrinology, Inc.

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December 29, 2011

Mr. Christian E. Einberg, Chief
U.S. Nuclear Regulatory Commission
Radioactive Materials Safety Branch
11545 Rockville Pike
Rockville, Maryland 20852

Re: Certification Board of Nuclear Endocrinology's Application to Become a Certifying Body under the Nuclear Regulatory Commission

Dear Mr. Einberg:

This is in follow-up to your letter dated May 12, 2011, (attachment 1) outlining the NRC's questions regarding our application to become recognized by the NRC as a certifying body for:

10 CFR Part 35.190 "Training for uptake, dilution, and excretion studies", 35.392 "Training for the oral administration of sodium iodide I-131 requiring a written directive in quantities less than or equal to 1.22 Gigabecquerels (33 millicuries)" and 10 CFR Part 35.394 "Training for the oral administration of sodium iodide I-131 requiring a written directive in quantities greater than 1.22 Gigabecquerels (33 millicuries)".

Enclosed as attachment 2 is a revised application which addresses each of the issues included in your letter:

- Required work experience to perform quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters;
- Requirement of calculating, measuring, and safely preparing patient or human research subject dosages;
- Update requirements for grandfathered authorized users to reflect NRC's regulations;
- Provide a sample board certificate for each pathway an individual may take to meet the requirements to be recognized as a certifying body by the NRC; and
- Where information can be found on the web site regarding candidate requirements and the Nuclear Medicine course.

Information regarding the AACE Nuclear Medicine course can be accessed at www.cbne.org.

According to your letter, the NRC no longer requires training on how to use dose calibrators, however the CBNE prefers candidates to be trained in the proper use of dose calibrators. This provision will continue to be a requisite because some agreement states require the use of a dose calibrator.

We hope that we have responded satisfactorily to the questions raised regarding the application and that it will now receive your favorable consideration. Your cooperation throughout this review process has been greatly appreciated.

Sincerely,

Donald C. Jones
CEO, Certification Board of Nuclear Endocrinology

DCJ/ahs



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 WASHINGTON, D.C. 20555-0001

May 12, 2011

Donald C. Jones, CEO
 Certification Board of Nuclear
 Endocrinology, Inc.
 Suite 200
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 Jacksonville, FL 32202

Dear Mr. Jones:

Thank you for your letter of February 11, 2011, responding to our September 16, 2010, letter. We have reviewed your responses and identified the following items that prevent us from recognizing your board at this time.

1. Your application indicates that the board will accept training obtained by taking the American Association of Clinical Endocrinology Nuclear Medicine Course. Please be aware that individuals completing the supervised work experience phase of the course may not meet the U.S. Nuclear Regulatory Commission (NRC) requirements you cite for the individual to be certified, and for NRC to recognize your board.

Specifically in Title 10 of the *Code of Federal Regulations* (10 CFR) 35.190 (c)(1)(ii)(B), NRC requires work experience "performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters" and, in 10 CFR 35.190(c)(1)(ii)(C), NRC requires "calculating, measuring, and safely preparing patient or human research subject dosages." NRC has identical requirements in 10 CFR 35.392(c)(2) and 10 CFR 35.394(c)(2). The Nuclear Medicine Course indicates the individual has to perform the daily constancy on the dose calibrator, "if applicable," and the activity of each dose shall be measured in the dose calibrator, "if one is available," and does not address other required quality control procedures. Nationally recognized standards include linearity, accuracy and geometry quality control procedures.

How will you determine if the individual has completed all of these requirements? This is especially important because your application indicates that individuals taking the Nuclear Medicine Course cannot get documentation of successfully completing either part of the course until after they have passed the Board Examination and a preceptor statement that the work experience as described in the Nuclear Medicine Course was completed does not indicate that the dose calibrator quality control procedures were performed or that it was used to measure dosages.

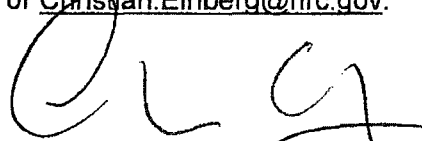
2. In 2009, NRC revised its requirements in 10 CFR 35.190, 35.392, and 35.394 to clarify that NRC permits grandfathered authorized users to provide the supervised work experience in these sections. The Board's and the Nuclear Medicine Course's failure to use the current language in the regulations restricts the authorized users supervising the work experience to only those individuals that are authorized users because they meet the current requirements in 10 CFR 35.190, 35.392, and 35.394. This restriction means

that the board must determine that each supervising authorized user meets the requirements 10 CFR 35.190, 35.392, and 35.394 to be an authorized user. If this is not the intent of the board, it should revise its requirements to match those of the current rule.

3. Your letter indicates that individuals may take one of four paths that will meet NRC's requirements to recognize your board, i.e., recognition under 10 CFR 35.190, recognition under 10 CFR 35.392, recognition under 10 CFR 35.394, and combined recognition under all three parts of the regulation. Please provide NRC with a sample board certificate for each of these pathways. Each sample certificate must be identical to the certificates your board will issue and should have a predominant watermark identifying the certificate as a "sample" or "not valid" so it cannot be easily replicated from the web site.

Once NRC recognizes a board, staff monitors the information the board provides to its candidates to ensure the commitments that form the basis for the recognition remain in effect. Staff usually monitors public web sites for this information. The staff has been unable to find information on your Board requirements or the Nuclear Medicine Course on the web. Can you provide information on where this information is or will be located?

If you have any questions or require additional information or clarification, please contact Michael Fuller, Team Leader, Medical Radiation Safety Team, at (301) 415-5020 or Michael.Fuller@nrc.gov, or me at (301) 415-5422 or Christian.Einberg@nrc.gov.



Christian E. Einberg, Chief
Radioactive Materials Safety Branch
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Background

The Certifying Board of Nuclear Endocrinology (CBNE), is the governing body of the American College of Endocrinology's (ACE) Nuclear Medicine Certification Program. The goal of the ACE Nuclear Medicine Certification Program is to provide the highest standards in physician education, ethics, and professional conduct for the safe use of Sodium Iodide 131 and 123 in the diagnosis and treatment of thyroid disease. In addition, it will allow endocrinologists to expand their practice to the outpatient and treatment of patients with hyperthyroidism and thyroid cancer. Through provision of prompt patient evaluation in the endocrinologist's office, and with direct explanations of the testing and subsequent therapy in a safe and efficient manner, quality patient care and radiation safety will be achieved.

The American Association of Clinical Endocrinologists represents subspecialty physicians who are recognized for their expertise in the care of patients with endocrine disorders, including thyroid diseases. These clinicians routinely perform consultations, diagnostic evaluations and treatment recommendations for patients with hyperthyroidism and thyroid cancer. These often include the use of both Sodium Iodide I-131 and I-123. The American College of Endocrinology (ACE), which is the educational and scientific arm of AACE, recognizes that the certification program for Nuclear Endocrinology provides assurance for optimal quality and safety in patient treatment outcomes.

The American College of Endocrinology (ACE) was incorporated in 1993 as a 501(c)(3) corporation (foundation) as the scientific and educational arm of the American Association of Clinical Endocrinologists (AACE) solely supported from contributions from members of AACE, industry, and other entities/individuals committed to its mission:

ACE is a scientific, educational and charitable medical organization dedicated to promoting the art and science of clinical endocrinology, diabetes, and metabolism for the improvement of patient care and public health.

Performance Gaps:

Statistics reveal that hyperthyroidism and thyroid cancer are often mismanaged by physicians who lack the knowledge and training in the treatment of these complicated diseases. To ensure accurate diagnosis and treatment of these diseases, it is imperative that physicians are adequately trained in this area. Endocrinologists have an exceptional record of safety in handling Sodium Iodide I-131 and I-123 and are therefore in the best position to provide diagnosis and treatment to patients in a safe and effective manner. However, records show that less than 5% of endocrinologists are able to treat hyperthyroidism and thyroid cancer with the use of I-131 in the outpatient/office setting.

Because the appropriate training for the use of radioisotopes in clinical practice is not offered by most medical schools and fellowship programs, the American Association of Clinical Endocrinologists (AACE) has developed a nuclear endocrinology training program. This program is designed to meet the requirements of the Nuclear Regulatory Commission (NRC) and those of the Certification Board of Nuclear Endocrinology (CBNE). AACE is responsible for faculty, course content and proper documentation of all training and work experience.

The course developed by AACE provides eighty hours of didactic instruction which was first given in 1997. This course meets the didactic training requirements set forth in CFR Title 10, Parts 35.190, 35.392 and 35.394. It is reviewed and certified each year by ACE. The College provides all Category 1 continuing medical education credits; reviews course content and faculty qualifications; and ensures the course remains

independent of commercial interests. To date, approximately 350 endocrinologists have successfully completed this course.

These endocrinologists who passed the course, however, were responsible for obtaining the NRC required work experience training on their own. This often presented a barrier to the individual endocrinologist. In addition many agreement states were hesitant to accept didactic education not acquired in a university or approved teaching hospital.

Thus in 2007 AACE decided to expand the eighty hour course into a full Nuclear Endocrinology Program that provides both the didactic and work experience training required by the regulations. This was done in conjunction with the establishment of the CBNE to accredit physicians meeting its standards.

Importance of Certification in Nuclear Endocrinology

The CBNE will set the highest standards for physician education, ethics, and professional conduct for the safe use of Sodium Iodide I-131 and I-123 in the diagnosis and treatment of thyroid disease.

ACE's certification of the Nuclear Endocrinology training program will allow endocrinologists to become limited authorized users on a medical institution's materials license or to expand their practice to the outpatient, single provider evaluation, and treat patients with hyperthyroidism and thyroid cancer. Through provision of prompt patient evaluation in the endocrinologist's office and with direct explanation of the testing and subsequent therapy in a safe and efficient manner, quality patient care and radiation safety will be achieved.

CBNE is an independent educational, non-profit corporation created to meet the needs of patients with thyroid diseases and the endocrinologists who provide them care. It was conceived and developed under the auspices of the American Association of Clinical Endocrinologists (AACE)

Statement of Purpose

This purpose of this document is two-fold. The first is to describe the independent CBNE and the requirements set forth by the board for acceptance as a board certified nuclear endocrinologist.

The second purpose is to describe the training program established by ACE in detail; showing how it meets all the didactic and work experience training requirements set forth in 10 CFR parts 35.190, 35.392, and 35.394.

The Certification Board of Nuclear Endocrinology (CBNE)

Governance:

The CBNE is tasked with the following charge:

1. To establish board certification requirements in strict compliance with the standards set by the NRC for training and work experience. The board will review all didactic and work experience submitted by candidates to ensure the candidate's training meets the requirements set forth in 10 CFR Parts 35.190, 35.392 and/or 35.394.
2. To create and administer a board exam.
3. To maintain autonomy and ultimate control over the decisions made regarding the board certification program, such as establishing eligibility criteria, setting the passing point for board certification, establishing selective test vendor and other operational processes related to the board certification program.

The CBNE consists of board certified individuals and remains independent from the AACE Board of Directors, the ACE Board of Trustees and the Program Committee of the Nuclear Medicine Training Program.

The formation of the CBNE as the governing body of the board certification program establishes the necessary firewall between the board certification examination and the preceptorship/training process. As such, members of the CBNE do not serve as faculty members of AACE's Nuclear Medicine Training Program or any other educational program from which physician's may receive training they will submit to the CBNE. This established firewall avoids conflicts of interest between board certification and educational functions.

Purpose:

It is the duty of the CBNE to assure each candidate seeking diplomate status meets all the requirements established by the Board and detailed in the sections to follow. The CBNE will accept all applications from qualified physicians. The Board will review the didactic training each candidate received to ensure proper hours have been acquired, the appropriate topics covered and the training meets minimum standards as demonstrated by certification of the training course by an independent certifying body.

The Board will then review the candidates work experience to assure the appropriate number of cases were treated or hours logged, the preceptor is a qualified individual and the appropriate tasks and subjects were covered by the preceptor.

Finally, it is the responsibility of the Board to develop, administer and score a Board Exam.

Board of Nuclear Endocrinology

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Board Meeting Procedures

The following will be conducted at board meetings.

1. The CBNE will review board certification requirements annually to ensure all requirements meet current regulatory standards for training under 10 CFR Part 35.190, 35.392 and 35.394. Any changes in the federal regulations governing the receipt, use, application or administration of Sodium Iodide I-131 or I-123 for the purposes of diagnosing and treating hyperthyroidism or treating thyroid carcinoma will be immediately included in the certification requirements.
2. The Board will review annually all test questions used on the board certification exam to insure questions and appropriate topics are relevant to the safe use of Sodium Iodide I-131 and I-123.
3. The Board will meet within a reasonable time of the completion of board exams to review applicants. Each applicant will be considered separately by the Board according to the following criteria:
 - a. Ensure applicant has met eligibility requirements for board certification as stated in "Criteria for Acquiring Board Certification" point 1.
 - b. Ensure applicant completed all didactic education hours and laboratory work as stated in "Criteria for Acquiring Board Certification" point 2.
 - c. Ensure applicant completed the necessary work experience as stated in "Criteria for Acquiring Board Certification" point 3.
 - d. Ensure applicant passed board certification exam with a score of 75% or higher.
 - e. To review any applicant seeking board certification under the designation "Grandfathered" as described in "Criteria for Acquiring Board Certification"
4. The Board may choose to meet for any other reason it deems necessary and to conduct any and all business necessary for the successful operation of the board certification program.
5. Minutes will be kept and distributed to each board member in a timely fashion.

Criteria for Acquiring Board Certification

The CBNE recognizes two paths for obtaining board certification. The first is for candidates who are not currently listed on a radioactive materials license as an authorized user. The second is for physicians who are already authorized users on a radioactive materials license. For those candidates who are not currently listed on a radioactive materials license as authorized users under parts 35.100 or 35.300, or equivalent sections of agreement state regulations, each of the following conditions must be fully satisfied:

1. Each candidate must have an accredited academic degree with the designation of MD or DO, be licensed to practice medicine in the United States of America, be board certified in endocrinology and a current member of good standing of AACE.
2. Each applicant must complete all hours of classroom and laboratory training on the following:
 - a. For candidates seeking Board Certification under Section 35.190, limited to uptakes; 60 hours of training and experience, including a minimum of 8 hours of classroom and laboratory training, in basic radionuclide handling techniques applicable to the medical use of unsealed byproduct material for uptakes. The training and experience must include:
 - i. Radiation physics and instrumentation;
 - ii. Radiation protection;
 - iii. Mathematics pertaining to the use and measurement of radioactivity;
 - iv. Chemistry of byproduct material for medical use;
 - v. Radiation biology.
 - b. For candidates seeking Board Certification under Section 35.392, Training for the oral administration of Sodium Iodide I-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries); 80 hours of classroom and laboratory training, applicable to the medical use of Sodium Iodide I-131 for procedures requiring a written directive. The training must include:
 - i. Radiation physics and instrumentation;
 - ii. Radiation protection;
 - iii. Mathematics pertaining to the use and measurement of radioactivity;
Chemistry of byproduct material for medical use;
 - iv. Radiation biology.
 - c. For candidates seeking Board Certification under Section 35.394, Training for the oral administration of Sodium Iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries); 80 hours of classroom and laboratory training applicable to the medical use of Sodium Iodide I-131 for procedures requiring a written directive. The training must include:
 - i. Radiation physics and instrumentation;
 - ii. Radiation protection;
 - iii. Mathematics pertaining to the use and measurement of radioactivity;
 - iv. Chemistry of byproduct material for medical use;
 - v. Radiation Biology.
3. Each applicant will satisfactorily complete work experience requirements under the supervision of an authorized user approved for that use. The training and experience must meet the task and

documentation requirements set by the NRC as outlined on the NRC forms 313A(AUD) and 313A(AUT). This will, at a minimum, include:

- a. For candidates seeking Board Certification under Section 35.190, limited to thyroid uptakes; 8 hours of work experience supervised by an authorized user approved under section 35.190, 35.290, 35.390 or equivalent Agreement State requirements. Work experience must include the following:
 - i. Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys;
 - ii. Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters;
 - iii. Calculating, measuring, and safely preparing patient or human research subject dosages;
 - iv. Using administrative controls to prevent a medical event involving the use of unsealed byproduct material;
 - v. Using procedures to contain spilled byproduct material safely and using proper decontamination procedures;
 - vi. Administering dosages of radioactive drugs to patients or human research subjects.

- b. For candidates seeking Board Certification under Section 35.392, training for the oral administration of Sodium Iodide I-131 requiring a written directive in quantities less than 1.22 gigabecquerels (33 millicuries); has work experience under the supervision of an authorized user approved under any one of sections 35.390, 35.392, 35.394 or equivalent Agreement State requirements. A supervising authorized user who meets the requirements in 35.390(b) must also have experience in administering dosages as specified in 35.390(b)(1)(ii)(G)(1) or (2). The work experience must include:
 - i. Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys;
 - ii. Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters;
 - iii. Calculating, measuring, and safely preparing patient or human research subject dosages;
 - iv. Using administrative controls to prevent a medical event involving the use of byproduct material;
 - v. Using procedures to contain spilled by product material safely and using proper decontamination procedures;
 - vi. Administering dosages to patients or human research subjects, that includes at least 3 cases involving the oral administration of less than or equal to 1.22 gigabecquerels (33 millicuries) of Sodium Iodide I-131.

- c. For candidates seeking Board Certification under Section 35.394, training for the oral administration of Sodium Iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries); has work experience under the supervision of an authorized user approved under sections 35.390 or 35.394, or equivalent Agreement State requirements. A supervising authorized user, who meets the requirements in 35.390(b), must also have experience in administering dosages as specified in 35.390(b)(1)(ii)(G)(2). The work experience must include:
 - i. Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys;
 - ii. Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters;

- iii. Calculating, measuring, and safely preparing patient or human research subject dosages;
 - iv. Using administrative controls to prevent a medical event involving the use of byproduct material;
 - v. Using procedures to contain spilled byproduct material safely and using proper decontamination procedures;
 - vi. Administering dosages to patients or human research subjects that include at least 3 cases involving the oral administration of greater than 1.22 gigabecquerels (33 millicuries) of Sodium Iodide I-131.
4. Each candidate seeking Board Certification must submit written documentation attesting to the satisfactory completion of all training and work experience requirements. For didactic classroom training the candidate must submit the Continuing Medical Education (CME) certificate demonstrating satisfactory completion of the training. Work experience documentation must include:
- a. For candidates seeking Board Certification under section 35.190, limited to thyroid uptakes; a written attestation submitted on NRC form 313A(AUD), signed by a preceptor authorized user who meets the requirements in sections 35.190, or 35.290, or 35.390, or equivalent Agreement State requirements, stating that the candidate has satisfactorily completed the requirements listed in part 3(A)(i-vi) above and has achieved a level of competency sufficient to function independently as an authorized user.
 - b. For candidates seeking Board Certification under section 35.392, training for the oral administration of Sodium Iodide I-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries); a written attestation submitted on NRC form 313A(AUT), signed by a preceptor authorized user who meets the requirements in section 35.390, 35.392 or 35.394, or equivalent Agreement State requirements stating that the candidate has successfully completed the requirements listed in part 3(B)(i-vi) above and has achieved a level of competency sufficient to function independently as an authorized user.
 - c. For candidates seeking Board Certification under section 35.394, training for the oral administration of Sodium Iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries); a written attestation submitted on NRC form 313A(AUT), signed by a preceptor authorized user who meets the requirements in section 35.390 or 35.394, or equivalent Agreement State requirements stating that the candidate has successfully completed the requirements listed in part 3(C)(i-vi) above and has achieved a level of competency sufficient to function independently as an authorized user.
5. Each applicant shall pass the appropriate sections of parts I and II of the board exam, for those areas in which they seek board certification, with a score of 75% or higher.
6. Each applicant applying from AACE's Nuclear Endocrinology Training Program will have passed the didactic course no earlier than October 6, 2007.

For applicants who are currently listed on a radioactive materials license as authorized users under parts 35.100 or 35.300, or equivalent agreement state regulations, a board certification with the designation "grandfathered" will be granted upon demonstration of such status and the unanimous approval of the board.

Once granted board certification such certification will be valid for ten years.

Board Exam

The board exam is the primary tool for evaluating the applicant's knowledge of radiation safety, biology, chemistry, physics, instrumentation and mathematics, as well as proper use and calibration of instruments. It is thus imperative the exam accurately and fairly measure these educational outcomes. Furthermore, basic precautions should be taken to ensure each applicant completes the exam alone with no aid from others. To ensure these goals the Board adopts the following policy governing the structure and administration of the board exam.

1. The board exam will be divided into two parts; one covering didactic training and one covering work experience. Each part will be further divided into three sections: one for each for parts 35.190, 35.392 and 35.394. The following provides a general outline of the exam:
 - a. Part I (didactic training)
 - i. Section 1: (for part 35.190)
 - ii. Section 2: (for part 35.392)
 - iii. Section 3: (for part 35.394)
 - b. Part II (work experience)
 - i. Section 1: (for part 35.190)
 - ii. Section 2: (for part 35.392)
 - iii. Section 3: (for part 35.394)
2. Applicants need only take those sections of Part I and Part II for which they seek board certification. (It must be noted that ACE has determined successful completion of Part I of the board exam is necessary to demonstrate competency in didactic training provided by the Nuclear Medicine Course. Thus in practice CBNE will schedule Part I of the exam to be taken after the presentation of the Nuclear Medicine Course and physicians from this course will take all three sections of Part I of the board exam in order to obtain full credit for the didactic training presented in the Nuclear Medicine Course. The exam will be administered by the CBNE and no faculty from the Nuclear Medicine Course will be involved or present at the time candidates sit for the exam. The CBNE is fully aware that applicants for board certification coming from other training programs may not have been held to these high standards; thus the requirement they present a CME certificate to demonstrate a basic competence before being allowed to sit for the Part I of the board exam.)
3. There will be at least one question for each hour of training or work experience.
 - a. Questions shall be multiple choice with a minimum of three distracters; or
 - b. Questions shall require the solving of mathematical problems.
4. Exam questions will be drawn from a body of questions approved by the CBNE
5. Three versions of each part of the exam will be produced. All exams will contain the same questions, though the order of presentation will differ on each version of the exam.
6. A member of the CBNE or its duly authorized representative will administer the exam.
7. Both parts of the exam will be offered on an annual basis. The exact date each part is given will be published at least six months prior to it being offered.

All completed exams will be kept for a minimum of five years. Scores of the applicants shall be kept for as long as the CBNE remains in existence.

Procedure for Recertification

Board certification will be valid for ten years. Diplomats may be recertified every ten years by meeting both of the following requirements.

1. Diplomats must show 50 hours of CME accumulated from the time of their initial certification until the time they apply for recertification. CME must be acquired through programs accredited by either the Accreditation Council for Graduate Medical Education (ACGME) or the Accreditation Council for Continuing Medical Education (ACCME). Topics must be relevant to knowledge and practice relevant to the performance of thyroid uptakes with Sodium Iodide I-131 or I-123, treatment of hyperthyroidism or thyroid cancer with Sodium Iodide I-131, radiation safety or any other topic deemed appropriate by the CBNE.
2. Diplomats must retake the sections of both parts of the board exam for which they have board certification and pass with a score of 75% or better.

Procedure for Revocation of Board Certification

Rational for Revocation:

A Diplomat's board certification may be revoked for any of the following reasons:

1. Loss of medical license.
2. Revocation of radioactive materials license by the NRC due to non-compliance or radiation safety violations.
3. Repeated and consistent violations of good radiation safety practices evidenced by independent physics audits; patient's complaints or citations by regulatory authorities.
4. Failure to maintain the ethical, professional or moral standards set forth by the Board. This includes misconduct that adversely affects professional competence, public safety, integrity or patient care.

Procedure for Revocation:

The CBNE will hear complaints and review evidence of bad practice that violate any of the above standards before making the determination to revoke diplomat's board certification. The Board shall provide written notification of proposed revocation and the reasons for such action by certified US Mail return receipt requested. Such notification will be sent at least 30 days before the effective date of revocation of diplomat status.

This written notification shall inform the diplomat that he or she has the right to petition the Board for a hearing.

A request for hearing shall be submitted in writing. The hearing will be held before the Board and opportunity shall be provided to the diplomat to present evidence, either written or oral. This hearing will be held no less than 30 days after the Board has received the request for a hearing.

The Board shall postpone termination of certification pending its decision. The decision of the Board shall be final. Failure of the affected individual to request a hearing within thirty (30) days shall constitute waiver of his or her right of appeal.

If, in the opinion of a majority of the board members, the violations reach an egregious level the Board may, through formal vote, implement any of the following:

1. Censure the diplomat, leaving certification intact.
2. Place the diplomat on one-year provisional or probationary status. If improvement is not demonstrated over the course of that year, the Board may elect to revoke the diplomat's certification.
3. Revoke the board certification.

AACE's Nuclear Endocrinology Training Program

AACE established a training program to aide its members in meeting the training and experience requirements set forth by the NRC in CFR Title 10, Parts 35.190, 35.392 and 35.394 and the requirements for board certification established by the CBNE. The training program consists of two parts. The first part is an 80 hour didactic course. This course is reviewed and certified every year by the ACE to ensure it meets only the highest educational standards and is free from commercial influence. The second part of the training program consists of providing work experience in a clinical environment under the supervision of an authorized user authorized under the appropriate section of the regulations. These preceptors are reviewed by the ACE to ensure they follow the program's guidelines and teach to the highest educational standards. The following sections of this application will explain, in detail, each part of the Nuclear Endocrinology Training Program and the steps that each physician must complete to successfully complete the program.

Didactic Course Structure

The following will be implemented to ensure the course and classroom activities meet the didactic training requirements of the NRC as stated in 10 CFR Parts 35.190, 35.392 and 35.394.

1. The course shall consist of 80 hours of classroom lecture, labs, demonstrations and video presentations. The topics presented in the course are as follows:
 - a. Radiation physics and instrumentation.
 - b. Radiation protection.
 - c. Mathematics pertaining to the use and measurement of radiation.
 - d. Chemistry of by-product material for medical use.
 - e. Radiation Biology.
2. Registration of applicants in the course shall be through AACE.
3. Sign-up sheets will be presented at the beginning of each class period. Each applicant will sign in with their signature on the space allotted by their printed name, indicating the date and time. Each applicant will sign out at the end of the day using the same procedure. This record of attendance will be kept with the course. Records of attendance shall be kept for as long as the AACE remains in existence.
4. Labs will be conducted providing each applicant hands-on experience with equipment and procedures that are central to any radiation safety program. Labs that require radioactive materials in levels greater than those exempted from regulatory requirements will use non-radioactive, dummy, sources*. The faculty will provide the data as the attendee works through the lab. Calculations required to complete the lab will use the provided data. Records of the completion of these labs will be kept for a minimum of five years.
5. The course must demonstrate compliance with the **NRC's** Naturally Occurring and Accelerator-Produced Radioactive Materials (NARM) regulations.

*This requirement only applies to the didactic training requirements. During the time candidates are acquiring work experience, they will use radioactive sources, both sealed and unsealed, under the supervision of an approved authorized user.

AACE Nuclear Endocrinology Course Syllabus

Program Chair: J. Woody Sistrunk, MD, FACE

Saturday

8:00-8:50am

Introduction

J. Woody Sistrunk, M.D., FACE

Objectives:

1. To provide an overview of the practice of Nuclear Endocrinology.
2. To give Background information on the necessity of the CBNE/DTC nuclear medicine course.
3. To develop logical questions for participants to consider as the course begins.

8:50-9:00am

Break

9:00-9:20am

Matter and Atomic Structure

Audrey Wegst, Ph.D.

Objectives:

1. Know the structure of an atom.
2. Know the definition of atomic mass, atomic number, isotope and isobar.
3. Understand the line of stability.
4. Understand binding energy.

9:20-9:50am

Alpha, Beta, Gamma Emissions, Internal Conversion

Audrey Wegst, Ph.D.

Objectives:

1. Know when different types of decay are probable.
2. Know the atomic number and mass of the daughter product of each decay.
3. Understand internal conversion and gamma emission.

9:50-10:00am

Break

10:00-10:50am

Logarithmic Review

Larry Cook, Ph.D.

Objectives:

1. Know what a logarithm is.
2. Understand logs to base 10.
3. Understand logs to base e.

10:50-11:00am

Break

11:00-11:50am

Radioactivity and Decay

Audrey Wegst, Ph.D.

Objectives:

1. Know the decay equation.
2. Know what λ is equal to and what it signifies.
3. Be able to use the decay equation to calculate the amount of radioactive material some time after and some time before the calibration time for a given isotope.

11:50-12:00pm

Break

12:00-12:50pm

Lunch Video "Radiation Safety: Environmental Services"

Objectives:

1. Know how radiation is defined.
2. Know where one is likely to encounter ionizing radiation in medical facilities.
3. Know the hazards encountered from ionizing radiation.
4. Know who is most affected by ionizing radiation.

12:50-1:00pm

Break

1:00-1:30pm

Decay Schemes: I-131, I-123, I-125, Tc-99m

Audrey Wegst, Ph.D.

Objectives:

1. To know specifically the details of the decay of I-131.
2. To know specifically the details of the decay of I-125.
3. To know specifically the details of the decay of I-123
4. To know specifically the details of the decay of Tc-99m.

1:30-1:50pm

Units of Measurement

Jay Spicer, M.S.

Objectives:

1. Know the definition of a 'Curie'.
2. Be able to convert Curies to microcuries.
3. Be able to convert Curies to millicuries.
4. Be able to convert Curies to Becquerels.

1:50-2:00pm

Break

2:00-3:05pm

Production of Radioisotopes

Jay Spicer, M.S.

Objectives:

1. Know the definition of 'by-product material' and the scope of the NARM regulations.
2. Know which isotopes are considered to be by-product material.
3. Know how I-131 is produced.
4. Know how I-123 is produced.

3:05-3:15pm

Break

3:15-3:45pm

Specific Activity

Jay Spicer, M.S.

Objectives:

1. Know the definition of 'specific activity'.
2. Know the variations of specific activity.
3. Know what a carrier free compound is.

3:45-4:00pm

Break

4:00-4:50pm

Units of Dose

Ben Friesen, Ph.D.

Objectives:

The participant should:

1. Understand the CGS and SI units and the relationship between them.
2. Know the definitions and nature of the following units:
 - a. Rad- absorbed dose of 100 ergs / gram.
 - b. Rem- dose equivalent obtained by multiplying the rad exposure by the appropriate “quality factor” and possibly modifying factors.
 - c. Quality factor- ‘adjusts’ the absorbed doses from different types of ionizing radiation for “equivalent biological” effects.
 - d. Roentgen- unit of exposure in the CGS system – charged produced in a specified quantity of air by ionizing photons.
 - e. Gray- SI unit of absorbed dose, 1 Joule / kg.
 - f. Sievert- SI unit for dose equivalent. (Gray multiplied by quality factor and possible modifying factors.)
 - g. Exposure- 1 Coulomb of charge produced in 1 kg of air by ionizing photons.
 - h. Effective dose equivalent.
 - i. Committed dose equivalent to an organ.
 - j. Committed effective dose equivalent.
 - k. Total effective dose equivalent.
 - l. Shallow dose equivalent.
 - m. Eye dose equivalent.
3. Know the annual limits imposed by federal regulation on the total effective dose equivalent, the eye dose equivalent, and the shallow dose equivalent.
4. Know the federal limits for exposure of the embryo, minors and the public.

4:50-5:00pm

Break

5:00-6:00pm

Units of Dose (Continued)

Ben Friesen, Ph.D.

Objectives:

The participant should:

1. Understand the CGS and SI units and the relationship between them. Rad- absorbed dose of 100 ergs / gram.
2. Know the definitions and nature of the following units:
 - a. Rem- dose equivalent obtained by multiplying the rad exposure by the appropriate “quality factor” and possibly modifying factors.
 - b. Quality factor- ‘adjusts’ the absorbed doses from different types of ionizing radiation for “equivalent biological” effects.
 - c. Roentgen- unit of exposure in the CGS system – charged produced in a specified quantity of air by ionizing photons.
 - d. Gray- SI unit of absorbed dose, 1 Joule / kg.
 - e. Sievert- SI unit for dose equivalent. (Gray multiplied by quality factor and possible modifying factors.)
 - f. Exposure- 1 Coulomb of charge produced in 1 kg of air by ionizing photons.
 - g. Effective dose equivalent.
 - h. Committed dose equivalent to an organ.
 - i. Committed effective dose equivalent.
 - j. Total effective dose equivalent.
 - k. Shallow dose equivalent.
 - l. Eye dose equivalent.
2. Know the annual limits imposed by federal regulation on the total effective dose equivalent, the eye dose equivalent, and the shallow dose equivalent.
4. Know the federal limits for exposure of the embryo, minors and the public.

6:00pm **Adjournment**

Sunday

8:00am **Quiz**

8:15-10:00am

Interaction of Particles and Photons with Matter

Audrey Wegst, Ph.D.

Objectives:

1. Know how each particle causes ionization and excitation in the material through which they travel.
2. Know all mechanisms of interaction of ionizing particles (e.g. Bremsstrahlung).
3. Know the following effects: Photoelectric, Compton and Pair Production.
4. Know how emissions of I-131 interact with tissue.

10:00-10:15am

Break

10:15-11:45am

Thyroid Physiology

Woody Sistrunk, M.D.

Objectives:

1. To develop knowledge in Nuclear Endocrinology, using the participant's own experiences as an endocrinologist.
2. To provide a historical understanding of the basis for Nuclear Endocrinology.
3. To review ALARA concepts specifically with the thyroid cancer patient in mind.

11:45-12:00pm

Break

12:00-12:50pm

Lunch Video "Radiation Safety: Security"

Objectives:

1. Know how to detect ionizing radiation.
2. Be able to recognize the International Radiation Warning Sign.
3. Know what a 'controlled area' is and the security issues involved with controlled area.

12:50-1:00pm

Break

1:00-2:15pm

Counting Statistics

Larry Cook, Ph.D.

Objectives:

1. Know a Poisson distribution.
2. Know a Gaussian distribution.
3. Know how statistics influence dose.
4. Know how statistics influence counting rate.

2:15-2:30pm

Break

2:30-2:55pm

Sealed Radioactive Sources, Standards

Audrey Wegst, Ph.D.

Objectives:

1. Know what standards are and how they are used.
2. Know the difference between primary and secondary standards.
3. Know which procedures require the use of standards.

2:55-3:00pm

Break

3:00-4:00pm

Counting efficiency, Minimum Detectable Activity and Background

Larry Cook, Ph.D.

Objectives:

1. Know what counting efficiency is and how to calculate it.
2. Know when to use minimum detectable activity.
3. Know what background is and how it varies.

4:00-4:15pm

Break

4:15-5:05pm

Radiation Detectors (Ionization Chambers)

Audrey Wegst, Ph.D.

Objectives:

1. Know which detectors use ionization chambers.
2. Know how gas filled detectors detect radiation and the characteristics of each type of detector.
3. Know how dose calibrators measure radioactivity.
4. Know the quality control tests that must be performed on dose calibrators.

5:05-5:15pm

Break

5:15-6:00pm

Radiation Detectors (Ionization Chambers) continued.

Audrey Wegst, Ph.D.

Objectives:

1. Know which detectors use ionization chambers.
2. Know how gas filled detectors detect radiation and the characteristics of each type of detector.
3. Know how dose calibrators measure radioactivity.
4. Know the quality control tests that must be performed on dose calibrators.

6:00pm **Adjournment**

Monday

8:00am **Quiz**

8:20-9:05am

Lab (Use of Survey Meters)

Audrey Wegst, Ph.D.

Greg Wegst, MA

1. Know and practice the proper use of survey meters (according to NRC regulatory guidelines)
2. Know and practice the use of survey meters to measure different forms of radiation.
3. Know what a survey meter can detect and what it cannot detect. (Where and when it cannot be used effectively).
4. Know and practice the proper use of a check source.
5. Know and practice the proper use of battery checks.

9:05-9:15am

Break

9:15-10:05am

Radiation Detectors (Survey Meters)

Audrey Wegst, Ph.D.

Objectives:

1. Know the different types of survey meters.
2. Know how to use each type of survey meter.
3. Know which survey meter to use in differing situations.
4. Know how differing types of radiation affect the sensitivity of the meter.

10:05-10:15am

Break

10:15-10:55am

Lab (Counting Efficiency, Background Determination)

Audrey Wegst, Ph.D

1. Know how to determine the counting efficiency of a survey meter.
2. Know how to determine the counting efficiency of a thyroid probe.
3. Know how to determine background.

10:55-11:00am

Break

11:00-11:50am

Lab (Laboratory Survey Techniques)

Audrey Wegst, Ph.D.

Greg Wegst, MA

1. Know and practice how to use area surveys to check ambient radiation levels.
2. Know and practice how to survey for surface contamination.
3. Know and practice good handling techniques to keep survey meter free of contamination.

11:50-12:00pm

Break

12:00-12:50pm

Lunch Video "Radiation Safety for Iodine I-131 Therapy"

Objectives:

1. Know what must be done to prepare an I-131 patient's hospital room.
2. Know the definition of a 'visitor safe line' and how to establish one.
3. Know how to prepare wall, floors and furniture to maintain ALARA in a radioactive patient's room.
4. Know how patients excrete I-131.
5. Know the proper procedures patients can take to reduce hazards of exposure to ionizing radiation.

12:50-1:00pm

Break

1:00-2:00pm

Scintillation Detectors

Audrey Wegst, Ph.D.

Objectives:

1. Know how materials scintillate.
2. Know how the light is collected and processed.
3. Know the uses of scintillation detectors and their characteristics.

2:00-2:15pm

Break

2:15-3:05pm

Pulse Height Analysis

Audrey Wegst, Ph.D.

Objectives:

1. Know why the pulse height from a gamma interaction is proportional to its energy.
2. Know what a pulse height spectrum is and some of the features noted.
3. Know why pulse height analysis is important to thyroid uptakes.

3:05-3:15pm

Break

3:15-4:05pm

Instruments using Scintillation Detectors

Audrey Wegst, Ph.D.

Objectives:

1. Know what instruments use pulse height analysis and why it is important.
2. Know the difference between gas filled detectors and scintillation detectors.
3. Understand how a thyroid probe and well counter work.

4:05-4:15pm

Break

4:15-5:05pm

Instruments using Scintillation Detectors (Continued)

Audrey Wegst, Ph.D.

Objectives:

1. Know what instruments use pulse height analysis and why it is important.
2. Know the difference between gas filled detectors and scintillation detectors.
3. Understand how a thyroid probe and well counter work.

5:05-5:15pm

Break

5:15-6:00pm

Lab (Dose Calibrator Tests I)

Audrey Wegst, Ph.D.

1. Know how to perform and practice doing an accuracy test.
2. Know how to perform and practice doing a constancy test.
3. Know how to perform and practice doing a geometry test.

6:00pm **Adjournment**

Tuesday

8:00am **Review**

8:30am **Quiz**

8:50-9:00am

Break

9:00-9:50am

Radiation Biology I

Ben Friesen, Ph.D.

Objectives:

1. Know the pathways by which ionizing radiation affects cells and cell function.
2. Know conditions affecting cell survival after irradiation.
3. Know at which point in the Mitotic cycle cells are most radiation sensitive.
4. Be familiar with single cell survival curves.
5. Understand the importance of risk models and dose response models in estimating the effect of radiation exposures on irradiated populations.
6. Know the difference between the absolute risk model and the relative risk model.

9:50-10:00am

Break

10:00-10:50am

Lab (Dose Calibrator Tests II)

Audrey Wegst, Ph.D.

1. Know how to perform and practice doing a linearity test using decay of isotope.
2. Know how to perform and practice doing a linearity test using the lead sleeve system.

3. Practice plotting data to determine linearity.

10:50-11:00am

Break

11:00-11:50am

Thyroid Uptakes

Audrey Wegst, Ph.D.

Objectives:

1. Know the procedures for a thyroid uptake.
2. Know the methods of calculation for a thyroid uptake.
3. Know the method of calculation if a standard capsule is obtained vs. using the patient capsule for its own standard.

11:50-12:00pm

Break

12:00-12:50pm

Lunch Video "Safe Handling of Sealed Radioactive Sources"

Objectives:

1. Know how time is used in radiation protection.
2. Know how distance is used in radiation protection.
3. Know how shielding is used in radiation protection.

12:50-1:00pm

Break

1:00-1:50pm

Common Pitfalls of Thyroid Uptakes

Audrey Wegst, Ph.D.

Objectives:

1. Know what a flat field collimator is.
2. Understand the importance of distance in obtaining good uptake results.
3. Understand how patient positioning can affect uptake results.
4. Know how a large goiter affects uptake results.

1:50-2:00pm

Break

2:00-2:50pm

Iodine 131 in the Treatment of Graves and Thyroid Cancer

David Preston, Ph.D.

Objectives:

1. Know the regulatory limitation in your area for treatment of hyperthyroidism and thyroid cancer with Iodine 131.
2. Recognize the importance of assessing the radiation fears of patient and patient's family.
3. Know the radiation health issues in the use of Iodine 131 for treatment of hyperthyroidism and thyroid cancer.

2:50-3:00pm

Break

3:00-3:50pm

Lab (Well Counter, Pulse Height Spectra, Thyroid Uptake, Thyroid Assay, ALARA, Sample Counting)

James Traylor, CNMT

Objectives:

1. Know how to use, and practice using, a well counter.
2. Become familiar with the pulse height spectra from various isotopes.
3. Observe how a thyroid uptake is performed with computerized equipment.
4. Observe how a bioassay is performed with computerized equipment.
5. Observe how wipe test samples are counted with a computerized well counter.

3:50-4:00pm

Break

4:00-4:50pm

Lab (Well Counter, Pulse Height Spectra, Thyroid Uptake, Thyroid Assay, ALARA, Sample Counting) (Continued)

James Traylor, CNMT

Objectives:

1. Know how to use, and practice using, a well counter.
2. Become familiar with the pulse height spectra from various isotopes.
3. Observe how a thyroid uptake is performed with computerized equipment.
4. Observe how a bioassay is performed with computerized equipment.
5. Observe how wipe test samples are counted with a computerized well counter.

4:50-5:00pm

Break

5:00-6:00pm

Lab (Well Counter, Pulse Height Spectra, Thyroid Uptake, Thyroid Assay, ALARA, Sample Counting) (Continued)

James Traylor, CNMT

Objectives:

1. Know how to use, and practice using, a well counter.
2. Become familiar with the pulse height spectra from various isotopes.
3. Observe how a thyroid uptake is performed with computerized equipment.
4. Observe how a bioassay is performed with computerized equipment.
5. Observe how wipe test samples are counted with a computerized well counter.

6:00pm **Adjournment**

Wednesday

8:00am **Review**

8:30am **Quiz**

9:00-9:50am

Radiation Biology II

Ben Friesen, Ph.D.

Objectives:

1. Know the difference between stochastic effects and non-stochastic effects.
2. Know the characteristics of radiation induced carcinogenesis.
3. Be familiar with the 'mutant clone' theory of carcinogenesis.

9:50-10:00am

Break

10:00-10:50am

Radiation Biology III

Ben Friesen, Ph.D.

Objectives:

1. Know the estimates for risk of cancer production from uptake of radioactive iodine.
2. Be familiar with the 'megamouse experiment' and its general results.
3. Understand the hereditary effects in humans of exposure to ionizing radiation.
4. Understand the concept of a 'genetically significant dose'.
5. Understand the effects of radiation on the cataract of the eye.

10:50-11:00am

Break

11:00-11:50am

Radiation Biology III (Continued)

Ben Friesen, Ph.D.

Objectives:

1. Know the estimates for risk of cancer production from uptake of radioactive iodine.
2. Be familiar with the 'megamouse experiment' and its general results.
3. Understand the hereditary effects in humans of exposure to ionizing radiation.
4. Understand the concept of a 'genetically significant dose'.
5. Understand the effects of radiation on the cataract of the eye.

11:50-12:00pm

Break

12:00-12:50pm

Lunch Video "General Radiation Safety I"

Objectives:

1. Introduction to personnel dosimetry.
2. Introduction to dosimetry badge records.
3. Know the different types of personal dosimeters used.

12:50-1:00pm

Break

1:00-1:50pm

Radiation Dosimetry: External, Internal

Ben Friesen, Ph.D.

Objectives:

1. Understand the proper use of personnel dosimetry – TLD's and / or OSL badges.
2. Know the definition of 'weighting factor'.
3. Know how organ specific distribution of a radioactive compound determines total risk.

1:50-2:00pm

Break

2:00-3:05pm

Protection from External Sources of Radiation: Time, Distance and Shielding

Jay Spicer, M.S.

Objectives:

1. Know the inverse square law.
2. Know the principles of radiation shielding.
3. Know how to use Time, Distance and Shielding for protection from ionizing radiation.
4. Know the difference in shielding between I-131 and I-125.
5. Know the protective devices used for protection from external sources and the gamma energies for which they are effective.

3:05-3:15pm

Break

3:15-3:45pm

Required Monitoring for External Radiation

Audrey Wegst, Ph.D.

Objectives:

1. Know the difference between shallow dose and deep dose.
2. Know how shallow doses and deep doses are monitored.
3. Understand the proper use of a whole body dosimeter.
4. Understand the proper monitoring of a declared pregnant worker.
5. Know the advantages and disadvantages of various types of personnel dosimeters.

3:45-3:50pm

Break

3:50-4:25pm

Protection from Internal Sources of Radiation (OR IS IT CONTAMINATION?)

Audrey Wegst, Ph.D.

Objectives:

1. Know why protection from I-131 internal contamination is so important.
2. Know the principles of protection from internal contamination.
3. Know the survey techniques to locate contaminated areas that may be in the workplace.
4. Know the importance of lab coats, gloves, masks and other protective devices.

4:25-4:30pm

Break

4:30-5:00pm

Monitoring for Internal Contamination Thyroid Bioassays

Audrey Wegst, Ph.D.

Objectives:

1. Know when bioassay monitoring is required.
2. Know how to perform a thyroid bioassay.
3. Know how to calculate the thyroid burden and the corrective action necessary.

5:00-5:10pm

Break

5:10-6:00pm

Lab (Area Surveys, Wipe Tests, Spill Procedures)

Audrey Wegst, Ph.D.

Objectives:

1. Know and practice proper procedures for conducting area surveys.
2. Know and practice proper procedures for collecting and counting wipe tests.
3. Know how to contain a radioactive spill to prevent further contamination.
4. Know whom to call if a radioactive spill occurs.

6:00pm **Adjournment**

Thursday

8:00am **Quiz**

8:30-9:20am

Tracer Kinetics

Jay Spicer, M.S.

Objectives:

1. Understand why a thyroid uptake is a meaningful reflection of thyroid activity.
2. Understand the basis of tracer kinetics.
3. Understand how the mass of a radioactive isotope allows competition with the stable form of the same element.

9:20-9:30am

Break

9:30-10:20am

Thyroid Treatment and Calculation of Dose

Jay Spicer, M.S.

Objectives:

1. Know how to calculate a therapy dose from results of an uptake.
2. Know the various philosophies used to determine treatment dose.

3. Know why the dose of Iodine 131 must be greater for cancer than for hyperthyroidism.

10:20-10:30am

Break

10:30-11:20am

Measurement of Dose and Proper Records

Audrey Wegst, Ph.D.

Objectives:

1. Know how to measure the dose administered to the patient.
2. Know the records that are required.
3. Know the allowable error between a prescribed dose and the administered dose.
4. Know what a prescribed dose is (Written Directives).

11:20-11:30am

Break

11:30-11:55am

Lab (Proper Administration of Dose)

Audrey Wegst, Ph.D.

Objectives:

1. Know how to properly open a package containing radioactive material.
2. Know safe handling techniques for administering radioactive pills to patients.
3. Know how to avoid contamination of personnel and equipment when giving a radioactive pill.

11:55-12:00pm

Break

12:00-12:50pm

Lunch Video "Pregnancy and the Radiation Worker"

Objectives:

1. Know how radiation affects the fetus throughout the different stages of gestation.
2. Know the radiation dose necessary to cause harm to the fetus in different stages of gestation.
3. Know how radioactive materials can internally contaminate the fetus.
4. Know the two sources of fetal radiation exposure.
5. Introduction to basic safety techniques to protect fetus from exposure to ionizing radiation.

12:50-1:00pm

Break

1:00-1:50pm

Example Problems

Larry Cook, Ph.D.

Objectives:

1. The main objective is to solve numerical problems using the concepts previously introduced.
2. Radioactive decay (logarithm and exponential)
 - a. Half-life
 - b. Counting rates and associated variance.
 - c. Minimum detectable activity.
 - d. Minimum count time to detect a specific amount of radioactivity.
3. The Chi-square test.
4. The T-test.

1:50-2:00pm

Break

2:00-3:05pm

Regulatory Agencies and Agreement States

Audrey Wegst, Ph.D.

Objectives:

1. Know the jurisdiction of the NRC.
2. Know the definition of 'by-product material' and be familiar with the NARM regulations.
3. Know what the definition of "agreement states".
4. Know who will have regulatory authority over YOU.

3:05-3:15pm

Break

3:15-4:05pm

Review of Iodine Chemistry

Jay Spicer, M.S.

Objectives:

1. Know the direct methods used in the preparation of iodine radiopharmaceuticals.
2. Know the indirect methods used in the preparation of iodine radiopharmaceuticals.
3. Know the number of moles of iodine given in a standard diagnostic dose of iodine.
4. Be aware of iodine allergies and the effect diagnostic doses may have.
5. List at least ten foods or drugs that are known to interfere with thyroid uptake of radioiodine.

4:05-4:15pm

Break

4:15-5:05pm

Iodinated Radiopharmaceuticals

Jay Spicer, M.S.

Objectives:

1. Know the specific characteristics of iodinated radiopharmaceuticals.
2. Know the ideal characteristics of radiopharmaceuticals.
3. Know the different methods used in the production of radiopharmaceuticals.

5:05-5:15pm

Break

5:15-6:00pm

Lab (Radioactive Package Receipt and Return)

Jay Spicer, M.S.

Objectives:

1. Know the difference between Class I, Class II and Class III labels.
2. Know, and practice, the steps involved in opening a radioactive package.
3. Know how to prepare, and practice preparing, a box before returning to radiopharmacy.

6:00pm **Adjournment**

Friday

8:00am **Quiz**

8:30-9:20am

Obtaining a Radioactive Materials License

Audrey Wegst, Ph.D.

Objectives:

1. Know where to obtain your license.
2. Know the content of a license.
3. Be familiar with a preceptor form.

9:20-9:30am

Break

9:30-10:05am

Review of State and NRC Regulations

Audrey Wegst, Ph.D.

Objectives:

1. Know the regulations that will apply to the use of radioactivity for the treatment of thyroid disorders.
2. Know how these regulations can be met in the normal functioning of a laboratory.
3. Know the compliance records that must be maintained for review by your regulatory agency.
4. Know the requirements for reporting incidents to your regulatory agency.
5. How to identify an agreement state and the address needed for submission of license materials.

10:05-10:15am

Break

10:15-11:05am

Personnel Monitoring Requirements

Audrey Wegst, Ph.D.

Objectives:

1. Know to whom you must provide radiation dosimeters.
2. Know when you must provide a finger badge.
3. Know which records must be provided to monitored individuals.
4. Know how long you must keep your records.

11:05-11:15am

Break

11:15-11:55am

Personnel Monitoring Requirements (Continued)

Audrey Wegst, Ph.D.

Objectives:

1. Know to whom you must provide radiation dosimeters.
2. Know when you must provide a finger badge.
3. Know which records must be provided to monitored individuals.
4. Know how long you must keep your records.

11:55-12:00pm

Break

12:00-12:50pm

Lunch Video "General Radiation Safety II"

Objectives:

1. Know how to keep track of radiation levels in and around the work area.
2. Know how to measure ambient radiation levels in the work area.
3. How to treat a radioactive patient in a medical emergency.
4. Who to contact should a radioactive patient die.
5. Know principles of designing a good work area for handling radioactive materials.

12:50-1:00pm

Break

1:00-1:50pm

ALARA Program

Audrey Wegst, Ph.D.

Objectives:

1. Know the ALARA I limits.
2. Know the ALARA II limits.
3. Know what must be done if limits are exceeded.
4. Know what management's responsibility is to the ALARA program.

1:50-2:00pm

Break

2:00-3:00pm

QMP Program

Audrey Wegst, Ph.D.

Objectives:

1. Know the proper records required to maintain a QMP program.
2. Know which procedures fall under a QMP program.
3. Know how often you must review your QMP program.

3:00-3:15pm

Break

3:15-4:05pm

Patient Release, NRC and States

Audrey Wegst, Ph.D.

Objectives:

1. Know when it is permissible to release a patient treated with I-131.
2. Know the NRC rules governing patient release.
3. Know the methods acceptable for compliance with NRC patient release rules.
4. Know under what circumstance patients treated with I-131 cannot be released.
5. Be familiar with the patient release form.

4:05-4:15pm

Break

4:15-5:15pm

Patient Release, NRC and States

Audrey Wegst, Ph.D.

Objectives:

1. Know when it is permissible to release a patient treated with I-131.
2. Know the NRC rules governing patient release.
3. Know the methods acceptable for compliance with NRC patient release rules.
4. Know under what circumstance patients treated with I-131 cannot be released.
5. Be familiar with the patient release form.

5:15-5:30pm

Break

5:30-6:00pm

Lab (Spill Procedures)

Audrey Wegst, Ph.D.

Greg Wegst, MA

Objectives:

1. Practice containing a radioactive spill.
2. Know how to monitor personnel involved in a radioactive spill.
3. Know the proper method for cleaning up radioactive spills.
4. Know the reporting requirements and who to contact regarding radioactive spills.
5. Know what is involved in assembling a radioactive spill kit.

6:00-6:15pm

Question and Answer Session

6:15pm **Adjournment**

Saturday

8:00-8:30am

Review and Questions

8:30-9:20am

Review of Essential Records for License Compliance

Audrey Wegst, Ph.D.

Objectives:

1. Know what records the NRC require a facility to keep.
2. Know for how long each type of record must be kept to comply with NRC regulations.
3. Be aware of the frequency which surveys, audits, and reviews must be performed.
4. Be aware of the records required to maintain an ALARA program.
5. Know how to conduct a facility review of the ALARA program.

9:20-9:30am

Break

9:30-10:20am

Review of Essential Records for License Compliance (Continued)

Audrey Wegst, Ph.D.

Objectives:

1. Know what records the NRC require a facility to keep.
2. Know for how long each type of record must be kept to comply with NRC regulations.
3. Be aware of the frequency which surveys, audits, and reviews must be performed.
4. Be aware of the records required to maintain an ALARA program.
5. Know how to conduct a facility review of the ALARA program.

10:20-10:30am

Break

10:30-11:45am

Regulations, Variation from State to State

Audrey Wegst, Ph.D.

Objectives:

1. Know the legal distinction between an agreement state and the NRC.
2. Know when an agreement state must comply with the NRC.
3. Example of Florida as agreement state demonstrating difference with NRC.

11:45-12:00pm

Break

12:00-12:50pm

Lunch Video "ALARA and the Administrator"

Objectives:

1. Know responsibilities of the facility administrator with respect to radiation safety.
2. Know what a radiation safety committee is and which facilities must have one.
3. Know what an exit summary is.
4. Be aware of the type of action regulatory bodies may take if deficiencies occur.
5. Know what a 'Management's Commitment to an ALARA Program' is.

12:50-1:00pm

Break

1:00-2:15pm

Labs: Proper use of GM Survey Meter

Audrey Wegst, Ph.D.

Greg Wegst, MA

Objectives:

1. Gain first hand experience of using a GM survey meter.
2. Know the proper methods for surveying for surface contamination.
3. Know the procedure for checking battery of survey meter
4. Know how to check the constancy of the survey meter.

2:15-2:30pm

Break

2:30-3:45pm

Lab: Proper Box Opening Procedure

Audrey Wegst, Ph.D

Greg Wegst, MA

Objectives:

1. Gain experience with proper box receipt and opening procedures.
2. Know what to do if a shipment is found to be contaminated.

3:45-4:00pm

Break

4:00-5:15pm

Lab: Wipe Test Survey

Audrey Wegst, Ph.D

Greg Wegst, MA

Objectives:

1. Gain practical experience performing a swipe test and counting the sample.
2. Discuss practical issues involved with daily and weekly surveys.

5:15-5:30pm

Break

5:30-6:00pm

Final review: Question and Answer period.

6:00pm **Adjournment**

LAB

PROPER USE OF GM-SURVEY METER

Applicant Name:

Objective: To demonstrate the proper use and function of a GM survey meter. The applicant will successfully demonstrate working knowledge and skill using a survey meter by following the appropriate procedures listed below.

- Wears gloves.
- Lab coat worn and buttoned.
- Performs battery check on survey meter.
- Performs constancy check using proper source.
- Successfully finds three of four hidden button sources demonstrating proper use of beta window on probe.
- Demonstrates proper technique for measuring ambient gamma radiation levels in work area.

I certify that the applicant named successfully completed the listed tasks and demonstrated competent use of a GM survey meter.

Signed

Print name

LAB

WIPE TEST SURVEY

Applicant Name:

Objective: To demonstrate the proper procedures to follow in performing a wipe test survey. The applicant will successfully complete the following tasks.

- Wears gloves.
- Lab coat worn and buttoned.
- Uses proper swab to wipe a 10 cm by 10 cm area.
- Take a one-minute background count on well counter.
- Records background count.
- Counts wipe for one minute in well counter.
- Records count.
- Converts net CMP to DPM using efficiency of well counter.

I certify that the applicant named successfully completed the listed tasks, properly performed a wipe test and counted that wipe sample using the appropriate instrument. The applicant demonstrated the ability to convert counts per minute into disintegrations per minute using the counter efficiency provided.

Signed

Print name

LAB

PROPER BOX RECEIPT/OPENING PROCEDURE

Applicant Name:

Objective: To demonstrate the proper procedures to follow in receiving and opening a box containing radioactive materials. The applicant will successfully complete the following tasks.

- Wears gloves.
- Lab coat worn and buttoned.
- Visually inspects container for physical damage.
- Checks address to insure proper delivery.
- Measures radiation levels at one meter from container using proper monitoring instrument.
- Measures radiation levels at surface of container using proper monitoring instrument.
- Takes a wipe of the box making sure area wiped is 10 cm by 10 cm.
- Takes and records a background count.
- Counts wipe with appropriate instrument using the appropriate procedures.

I certify that the applicant named successfully completed the listed tasks and understands the proper procedures for receiving and opening a container containing radioactive material.

Signed

Print name

Work Experience

Garnering experience working with radioactive materials is necessary to ensure they are handled safely. Work experience will cover the progress of the radiopharmaceutical through the entire treatment procedure. Each task will be performed by the candidate as far as this is possible and without violating any applicable laws. Merely observing the performance of these tasks is not enough. Work experience must be obtained with real patients undergoing actual procedures appropriate for the section of the regulations for which the candidate seeks certification. Use of dummy sources, placebos, demonstration equipment, or hypothetical test results and case histories will not suffice for meeting the requirements of this section. AACE believes the preceptor should provide guidance and instruction in good radiation safety practice while observing the candidate perform the work.

For candidates to successfully complete the work experience program under section 35.392 each of the following tasks must be performed with three patients. The work experience will consist of the following:

1. Consult with the supervising or precepting physician on the dose of Sodium Iodide I-131 to be administered to the patient.
2. Ordering the dose from the radiopharmacy.
3. Receiving the dose and demonstrating proper safe handling practices to maintain As Low As Reasonably Achievable (ALARA). The shipping container with the dose will be checked for damage and surveyed at one meter, then at the surface. A wipe test will be taken and analyzed and the shipping container opened following licensee's procedure.
4. The candidate will perform the following quality control tests on the dose calibrator: Geometry test, Linearity test, Accuracy test and the daily Constancy test.
5. The activity of each dose shall be measured in the dose calibrator. The activity at time of administration shall also be calculated from information provided by the radiopharmacy.
6. Prepare the actual dose to be given to the patient.
7. Use administrative controls to prevent a medical event involving the use, or misadministration of Sodium Iodide I-131.
8. Demonstrate the ability to contain and clean a spill of Sodium Iodide I-131. This work should follow proper decontamination procedures.
9. Consultation with the patient on radiation safety practices the patient should follow if they are being released from the facility.
10. Administering the dose to the patient, under direct supervision of a preceptor or authorized user providing work experience.
11. Demonstrate proper procedures for performing a bioassay including performance of an efficiency and constancy test on the thyroid uptake probe used in the bioassay.

12. Perform area survey of lab and dosing area at the end of the day. Perform wipe tests of same area and determine the activity found, if any, in disintegrations per minute.
13. Proper use of a survey instrument will be demonstrated throughout these tasks when appropriate.
14. Any other quality control procedure, patient and radiation safety or worker safety requirement, or regulatory requirement promulgated in the future will immediately be added to this list.

For candidates to successfully complete the work experience program under section 35.394 each of the following tasks must be performed with three patients. The work experience will consist of the following:

1. Consult with the supervising or preceptoring physician on the dose of Sodium Iodide I-131 to be administered to the patient.
2. Ordering the dose from the radiopharmacy.
3. Receiving the dose and demonstrating proper safe handling practices to maintain ALARA. The shipping container holding the dose will be checked for damage and surveyed at one meter, then at the surface. A wipe test will be conducted and the shipping container opened following licensee's procedure.
4. The candidate will perform the following quality control tests on the dose calibrator: Geometry test, Linearity test, Accuracy test and the daily Constancy test.
5. The activity of each dose shall be measured in the dose calibrator. The activity at the time of administration shall also be calculated from information provided by the radiopharmacy.
6. Prepare the actual dose to be given to the patient.
7. Use administrative controls to prevent a medical event involving the use, or misadministration of Sodium Iodide I-131.
8. Demonstrate the ability to contain and clean a spill of Sodium Iodide I-131. This work should follow proper decontamination procedures.
9. Determine whether the patient can be released from the facility after administration of the dose using the criteria found in the most current version of the NRC regulatory guide 1556, appendix U. If the patient cannot be released the candidate seeking board certification will help prepare the patient's room. This will include:
 - a. Preparation of the patient's room to limit contamination of the room, bath and surrounding areas by Iodine I-131.
 - b. Establishing a visitor's safe line.
 - c. Ensuring all nursing staff are properly briefed on all radiation safety issues.
 - d. Ensuring all appropriate signs are posted.
10. Consultation with the patient on radiation safety practices the patient should follow at the time of their release from the facility.

11. Administering the dose to the patient under the direct supervision of a preceptor or authorized user providing work experience.
12. Demonstrate proper procedures for performing a bioassay including performance of an efficiency and constancy test on the thyroid uptake probe used in the bioassay.
13. Perform area survey of lab and dosing area at the end of the day. Perform wipe tests of same area and determine the activity found, if any, in disintegrations per minute.
14. Proper use of a survey instrument will be demonstrated throughout these tasks when appropriate.
15. Any other quality control procedure, patient and radiation safety or worker safety requirement, or regulatory requirement promulgated in the future will immediately be added to this list.

For candidates to successfully complete the work experience program under section 35.190 each of the following tasks must be performed with actual patients and consist of at least eight hours of training. The work experience will consist of the following:

1. Consult with the supervising or preceptoring physician on the dose of Sodium Iodide I-131 or I-123 to be administered to the patient.
2. Ordering the dose from the radiopharmacy.
3. Receiving the dose and demonstrating proper safe handling practices to maintain ALARA. The shipping container holding the dose will be checked for damage and surveyed at one meter, then at the surface. A wipe test will be conducted and the shipping container opened following licensee's procedure.
4. The candidate will perform the following quality control tests on the dose calibrator: Geometry test, Linearity test, Accuracy test and the daily Constancy test.
5. The activity of each dose shall be measured in the dose calibrator. The activity at the time of administration shall also be calculated from information provided by the radiopharmacy.
6. Perform a constancy and background test on the thyroid uptake probe and count the standard capsule.
7. Prepare the actual dose to be given to the patient.
8. Use administrative controls to prevent a medical event involving the use, or misadministration of Sodium Iodide I-131 or I-123.
9. Demonstrate the ability to contain and clean a spill of Sodium Iodide I-131 or I-123. This work should follow proper decontamination procedures.
10. Consultation with the patient on radiation safety practices the patient should follow.
11. Administering the dose to the patient.
12. Demonstrate proper procedures for performing the uptake.

13. Perform area survey of lab and dosing area at the end of the day. Perform wipe tests of same area and calculate the activity found, if any, in disintegrations per minute.
14. Proper use of a survey instrument will be demonstrated throughout these tasks when appropriate.
15. Any other quality control procedure, patient and radiation safety or worker safety requirement, or regulatory requirement promulgated in the future will immediately be added to this list.

Policy on Cheating

AACE believes that effective learning often happens in groups and in mutually supporting collaboration. Activities such as study groups; teamwork and group projects will be fostered in the classroom.

However, each physician seeking to successfully complete the training program must demonstrate knowledge of the material and competence in radiation safety practices individually; for it is individuals who are certified, not groups. Thus each applicant must be judged on his or her own individual performance.

The AACE will not tolerate any attempt to pass any part of the training program through the use of outside sources, copying answers of others or collaboration on exams, quizzes or labs. Any attempt to do so will result in automatic expulsion from the training program. AACE defers to the CBNE on administration of the final exam (board exam) for the course trusting in the CBNE's procedures to ensure a fair examination procedure.

Corporate Support and Advertising Policy

AACE believes that all educational activities and environments, such as lectures, labs, exams and classrooms, should be as free from bias and adverse influence as possible. Information presented by faculty should be objective, scientifically rigorous, and conform to the best practices of radiation safety and patient care. In order to maintain a learning environment as free from external bias as possible the following policy is adopted:

1. The didactic program will allow no advertising, solicitation of business or conferences in the interest of business inside the classroom. Applicants are urged to report any violations of this rule to the program chair.
2. Corporate sponsorship for any part of an educational program must be made anonymously. Any loan of equipment or materials must be done as anonymously as possible.
3. Any faculty, facilitator, preceptor or presentation must disclose any conflict of interest they may have. Such conflict includes, but is not limited to; financial interest in, or professional relationship with, any manufacturer or provider of services, equipment, and pharmaceuticals discussed in the lecture or presentation.

Requirements for Successful Completion of Training Program

Physicians enrolled in the ACE's Nuclear Endocrinology Training Program must meet all the following requirements to successfully complete the training program.

1. Didactic Nuclear Endocrinology Course.

The physician must successfully complete the requisite hours of didactic educational requirements that meet the content criteria set by the NRC. Hours of instruction are as follows:

- a. Section 35.392
Candidates seeking to complete training required under section 35.392 must complete the entire course syllabus beginning on page 17. This comprises 80 hours of classroom and laboratory training applicable to the use of Sodium Iodide I-131 for procedures requiring a written directive.
- b. Section 35.394
Candidates seeking to complete training required under section 35.392 must complete the entire course syllabus beginning on page 17. This comprises 80 hours of classroom and laboratory training applicable to the use of Sodium Iodide I-131 for procedures requiring a written directive.
- c. Section 35.190
No physician has attended the training program only to obtain authorized user status under section 35.190; nor does AACE believe any future physician will seek Authorized User status only under section 35.190. In practice physicians always apply for approval under 35.190 in conjunction with 35.392 or both 35.392 and 35.394. However, to demonstrate the Nuclear Endocrinology Training Program does meet the regulatory requirements for training and experience for 35.190 the following lectures from the course syllabus (beginning on page 17) are required for any physician seeking to complete training required under section 35.190 for a total of 64.5 hours of didactic training.

<u>Lecture Title</u>	<u>Hours</u>
Introduction	1
Matter and Atomic Structure	20 min
Alpha, Beta, Gamma Emissions and Internal Conversion	40 min
Logarithmic Review	1
Radioactivity and Decay	1
Radiation Safety Video "Environmental Services"	1
Decay Schemes	0.5
Units of Measurement	0.5
Production of Radioisotopes	1.25
Specific Activity	0.5
Units of Dose	2.25
Interaction of Particles with Matter	2
Radiation Safety Video "Security"	1
Counting Statistics	1.5
Sealed Radioactive Sources and Standards	0.5
Counting Efficiency, MDA, Background	1.25
Radiation Detectors (Ionization Chambers)	1.75
Lab- Use of Survey Meters	1
Radiation Detectors (Survey Meters)	1

Lab- Counting Efficiency, Background Determination	0.75
Lab- Survey Techniques	1
Scintillation Detectors	1.25
Pulse Height Analysis	1
Instruments Using Scintillation Detectors	1.75
Lab- Dose Calibrator Tests I	1
Radiation Biology I	1
Lab- Dose Calibrator Tests II	0.75
Thyroid Uptakes	1
Radiation Safety Video "Safe Handling of Sealed Sources"	1
Common Pitfalls of Thyroid Uptakes	1
Lab- Well Counter, Pulse Height Spectra, Thyroid Uptake, Thyroid Assay, ALARA, Sample Counting	3
Radiation Biology II	1
Radiation Biology III	1.75
Radiation Safety Video "General Radiation Safety I"	1
Radiation Dosimetry: External / Internal Exposure	1
Protection from External Sources of Radiation: Time, Distance, Shielding	1.25
Required Monitoring for External Radiation	0.5
Protection from Internal Sources of Radiation	1.75
Lab- Area Surveys, Wipe Tests, Spill Procedures	1
Tracer Kinetics	1
Measurement of Dose and Proper Records	1
Lab- Proper Administration of Dose	0.5
Radiation Safety Video "Pregnancy and the Radiation Worker"	1
Example Problems (Mathematics)	1
Regulatory Agencies and Agreement States	1.25
Review of Iodine Chemistry	1
Lab- Radioactive Package Receipt and Return	0.75
Obtaining a Radioactive Materials License	1
Review of State and NRC Regulations	1.25
Personnel Monitoring Requirements	1.75
Radiation Safety Video "General Radiation Safety II"	1
ALARA Program	1
Quality Management Program	1.25
Lab- Spill Procedures	0.5
Review of Essential Records of License Compliance	1.75
Regulation Variations from State to State	1.75
Radiation Safety Video "ALARA and the Administrator"	1
Tour of Nuclear Medicine Department	3.25

2. Post Program Examination.

Physicians must achieve a passing score of 75% or higher in the post program comprehensive examination administered after the 80 hour didactic course. The CBNE will schedule Part I of the board exam to be taken after the 80 hour didactic course. Only physicians who pass the CBNE board exam, part I, will be considered to have passed the didactic portion of the training program.

3. Supervised Work Experience / Preceptorship.

Physicians must successfully complete work experience, under the supervision of an authorized user who is certified by the ACE and meets the requirements as described in the appropriate sections of the regulations, as follows:

- a. Section 35.190
Physicians seeking to complete the training program for 35.190 must complete all the tasks outlined in the Work Experience Requirements listed on page 40. In addition, the candidate must complete a post work experience exam covering these tasks. A grade of 75% or higher is required to pass the exam. In practice, physicians who pass Part II, section I, of the CBNE board exam will be considered to have passed this section of the training. Physicians who do not wish to sit for board certification may pass an exam administered by the preceptor and approved by ACE.
- b. Section 35.392
Physicians seeking to complete the training program for 35.392 must complete all tasks outlined in the Work Experience Requirements listed on pages 38-39. In addition they must pass an exam covering these subjects/tasks. In practice, physicians who pass Part II, Section II of the CBNE's board certification exam will be considered to have passed this section of the training. Physicians who do not wish to sit for board certification may pass an exam administered by the preceptor and approved by ACE.
- c. Section 35.394
Physicians seeking to complete the training program for 35.394 must complete all the tasks outlined in the Work Experience Requirements listed on pages 39-40. In addition they must pass an exam covering these subjects/tasks. In practice, physicians who pass part II section III of the CBNE's board certification exam will be considered to have passed this section of the training. Physicians who do not wish to sit for board certification may pass an exam administered by the preceptor and approved by ACE.

4. Documentation of Training.
Physicians must document the successful completion of both the didactic and work experience training. This documentation is as follows:

- a. Didactic Training.
Documentation of physicians successful completion of the didactic portion of the training program will be demonstrated through receipt of the continuing medical education certificate.
- b. Preceptorship.
Documentation of physicians' successful completion of the work experience portion of the training program will be through a written attestation that all work experience requirements have been successfully completed for the sections of the regulations under which the physician seeks certification. This attestation must be signed by an authorized user approved by ACE to teach in the Nuclear Endocrinology Training Program and who meets the requirements as stated in the appropriate sections of the regulations. The written attestation is to be completed on either NRC form 313A(AUD) and/or NRC Form 313A(AUT), whichever is appropriate.

Requirements for Preceptors

AACE requires the preceptors who teach the work experience portion of the Nuclear Endocrinology Training Program adhere to the highest standards of educational excellence. In addition, the training program needs to maintain compliance with the requirements set forth in the regulations under sections 35.190, 35.392, and 35.394. It is also important that the experience received by candidates be as uniform as possible and cover all the subjects and topics required by the training program. In order to realize these goals AACE sets forth these standards all preceptors in the training program must meet.

- 1) Preceptors who teach for the Nuclear Endocrinology Training Program must be authorized users identified on an NRC or agreement state license for the types of uses they will be supervising.
- 2) Preceptors must agree, in writing, to adhere to the standards and faculty ethics policy of the AACE and ACE. They must teach each topic or subject required in the work experience program.
- 3) Preceptors must meet all the requirements of ACE for faculty in a certified education program. This includes the submission of a **Curriculum Vitae (CV)**, completion of the Speaker Acceptance and Attestation Form and Disclosure of Relevant Financial Relationships form.
- 4) Preceptors must submit a copy of the Radioactive Materials License on which they are listed as an Authorized User.

AMERICAN COLLEGE OF ENDOCRINOLOGY (ACE)

and the

CERTIFICATION BOARD OF NUCLEAR ENDOCRINOLOGY (CBNE)

Certifies that

Has successfully fulfilled the requirements for Nuclear Endocrinology Training Program, to receive Board Certification under the Nuclear Regulatory Commission requirements, 10 CFR Section 35.190 "Training for uptake, dilution, and excretions studies" and is entitled to all of the rights and privileges associated with this certification.

On

These needs can only be met by training endocrinologists in a residency program or through this annual course sponsored by AACE. It is therefore incumbent upon AACE to present a course designed to meet specific, didactic training guidelines set forth by the rules and regulations of the Nuclear Regulatory Commission for the acquisition of a Radioactive Materials License and "authorized user" for the diagnostic and therapeutic use of radioactive iodine.

The American Association of Clinical Endocrinologists (AACE) is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

The American Association of Clinical Endocrinologists (AACE) designates this educational activity for a maximum of 80 AMA PRA Category 1 Credit(s)TM. Physicians should only claim credit commensurate with the extent of their participation in the activity.



*ACE President
Daniel S. Duick, MD, FACP, FACE*

*Program Chairman
J. Woody Sistrunk, MD, FACE*



AMERICAN COLLEGE OF ENDOCRINOLOGY (ACE)

and the

CERTIFICATION BOARD OF NUCLEAR ENDOCRINOLOGY (CBNE)

Certifies that

Has successfully fulfilled the requirements for Nuclear Endocrinology Training Program, to receive Board Certification under the Nuclear Regulatory Commission requirements, 10 CFR Section 35.392 "Training for the oral administration of sodium iodide I-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries)" and is entitled to all of the rights and privileges associated with this certification.

On

These needs can only be met by training endocrinologists in a residency program or through this annual course sponsored by AACE. It is therefore incumbent upon AACE to present a course designed to meet specific, didactic training guidelines set forth by the rules and regulations of the Nuclear Regulatory Commission for the acquisition of a Radioactive Materials License and "authorized user" for the diagnostic and therapeutic use of radioactive iodine.

The American Association of Clinical Endocrinologists (AACE) is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

The American Association of Clinical Endocrinologists (AACE) designates this educational activity for a maximum of 80 AMA PRA Category 1 Credit(s)TM. Physicians should only claim credit commensurate with the extent of their participation in the activity.



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CERTIFICATION BOARD OF NUCLEAR ENDOCRINOLOGY (CBNE)

Certifies that

Has successfully fulfilled the requirements for Nuclear Endocrinology Training Program, to receive Board Certification under the Nuclear Regulatory Commission requirements, 10 CFR Section 35.394 "Training for the oral administration of sodium iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries)" and is entitled to all of the rights and privileges associated with this certification.

On

These needs can only be met by training endocrinologists in a residency program or through this annual course sponsored by AACE. It is therefore incumbent upon AACE to present a course designed to meet specific, didactic training guidelines set forth by the rules and regulations of the Nuclear Regulatory Commission for the acquisition of a Radioactive Materials License and "authorized user" for the diagnostic and therapeutic use of radioactive iodine.

The American Association of Clinical Endocrinologists (AACE) is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

The American Association of Clinical Endocrinologists (AACE) designates this educational activity for a maximum of 80 AMA PRA Category 1 Credit(s)TM. Physicians should only claim credit commensurate with the extent of their participation in the activity.



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