

April 14th, 2009

Sent via email to sandra.gabriel@nrc.gov

Ms. Sandra Gabriel, Senior Health Physicist
U.S. NRC Region I
Nuclear Materials Section B
475 Allendale Road
King of Prussia, Pennsylvania 19406-1415

Re: License Amendment to add an Authorized User for
NRC Radioactive Materials License # 47-00404-02
(Cabell Huntington Hospital, located in Huntington, West Virginia)

Dear Sandy:

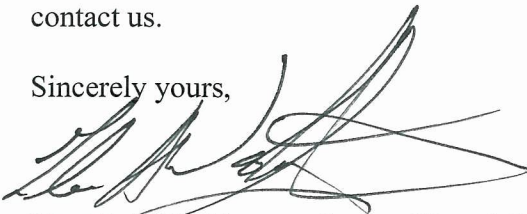
We wish to amend our radioactive materials license to add the following individual as an Authorized User on our Radioactive Materials License for the uses indicated:

Authorized User	Authorized Material and Uses	Training and Experience
Tipu Saleem, M.D.	10 CFR 35.300 for I-131 radiopharmaceutical therapy less than and greater than 33 mCi	10 CFR 35.392 and .394 via NRC 313A (AUT)

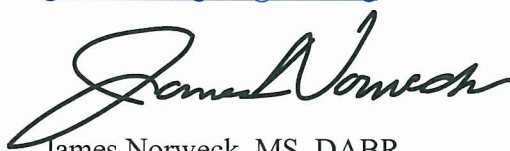
Dr. Saleem attended the American Association of Clinical Endocrinologists 80 hour Nuclear Medicine Course in 2005 and has documented the necessary training and experience under 10 CFR 35.392 and .394. Supporting documentation is attached. Please note that we currently have an amendment request pending under Mail Control No. 143557.

We appreciate your consideration of this amendment request. If you have any questions regarding this request or should you need any further information, please do not hesitate to contact us.

Sincerely yours,



Mr. Glen Washington, Senior VP and COO
Phone: 304-526-2309
glen.washington@chhi.org



James Norweck, MS, DABR
Radiation Safety Officer
Cell: 304-710-0172
jnorweck@radiology-inc.com



Fred Peatross, CNMT
Nuclear Medicine Supervisor
Phone: 304-526-2129
Fred.peatross@chhi.org

February 4, 2009

Hoyt Burdick, MD
Vice President for Medical Affairs
Cabell Huntington Hospital
1340 Hal Greer Boulevard
Huntington, WV 25701

Dear Dr Burdick:

I want to apply for provision of additional privileges to be able to treat patients with hyperthyroidism and thyroid cancer with radioactive iodine (RAI-131) at your facility. I have completed endocrinology fellowship from Milton S. Hershey Medical Center Penn State Univ , Hershey PA (date of graduation 06-30-2003) and I am currently working as an Assistant Professor of Medicine in the Section of Endocrinology in Marshall University. I have completed 80 hours of the basic radioisotope handling course covering the topics of radio pharmacy, radiation biology, radiation protection and safety, radiation physics and instrumentation, and the mathematics associated with use of radioactivity and received a passing grade. This course which was held from September 24, 2005 to October 1, 2005 (American Association of Clinical Endocrinologist (AACE), Kansas City, MO) is designed to qualify a physician as an authorized user of radiopharmaceuticals, including the medical use of sodium iodide I-131 for procedures requiring a written directive. It meets all the requirements set forth by the US Nuclear regulatory Commission and all the agreement states as outlined in the current code of federal regulations.

In addition to the above, I have the experience of treating more than the required number of patients with hyperthyroidism and thyroid cancer under the supervision of Dr. Abid Yaqub M.D., a NRC licensed user of radioactive iodine I-131 at Cabell Huntington Hospital and St. Mary's Medical Center. I have experience of clinical care of a number of patients with thyroid cancer and hyperthyroidism including those with Graves' disease and toxic uni-nodular and multi-nodular goiters.

I appreciate your kind consideration of my application.
Yours sincerely,



Tipu Faiz Muhammad Saleem MD
Assistant Professor of Medicine
Section of Endocrinology

Saleemt@marshall.edu

Approved by Hoyt J Burdick
alshahid Approved
Letter
Saleem



Cabell Huntington
Hospital

1340 Hal Greer Boulevard, Huntington, WV 25701 · phone 304-526-2065

March 25, 2009

Tipu Saleem, MD
JCESOM Dept. of Medicine
1249 15th Street
Huntington, WV 25701

Dear Dr. Saleem:

Upon recommendation of the Credentials and Medical Executive Committees of the Medical and Dental Staff, the Board of Directors, at its meeting held March 24, 2009, approved your request for the additional privileges of performing both **DXA scan interpretation** and **Administration of radioactive iodine (I-131)**.

There will be retrospective case review of these procedures for the first three months as part of your Focused Professional Evaluation.

If you have any questions, you may contact Medical Affairs at 304-526-2065.

Sincerely,

Hoyt J. Burdick, M.D.

Hoyt J. Burdick, MD
Vice President of Medical Affairs

HJB/mle

**AUTHORIZED USER TRAINING AND EXPERIENCE
AND PRECEPTOR ATTESTATION**
(for uses defined under 35.300)
[10 CFR 35.390, 35.392, 35.394, and 35.396]

APPROVED BY OMB: NO. 3150-0120
EXPIRES: 10/31/2008

Name of Proposed Authorized User

TIPU FAIZ M SALEEM

State or Territory Where Licensed

~~WEST VIRGINIA~~ VIRGINIA (WV)

Requested Authorization(s) (check all that apply):

35.300 Use of unsealed byproduct material for which a written directive is required

OR

35.300 Oral administration of sodium iodide I-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries)

35.300 Oral administration of sodium iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries)

35.300 Parenteral administration of any beta-emitter, or photon-emitting radionuclide with a photon energy less than 150 keV for which a written directive is required

35.300 Parenteral administration of any other radionuclide for which a written directive is required

PART I-- TRAINING AND EXPERIENCE
(Select one of the three methods below)

* Training and Experience, including board certification, must have been obtained within the 7 years preceding the date of application or the individual must have related continuing education and experience since the required training and experience was completed. Provide dates, duration, and description of continuing education and experience related to the uses checked above.

1. Board Certification

- a. Provide a copy of the board certification.
- b. For 35.390, provide documentation on supervised clinical case experience. The table in section 3.c. may be used to document this experience.
- c. For 35.396, provide documentation on classroom and laboratory training, supervised work experience, and supervised clinical case experience. The tables in sections 3.a., 3.b., and 3.c. may be used to document this experience.
- d. Skip to and complete Part II Preceptor Attestation.

2. Current 35.300, 35.400, or 35.600 Authorized User Seeking Additional Authorization

a. Authorized User on Materials License _____ under the requirements below or equivalent Agreement State requirements (check all that apply):

35.390 35.392 35.394 35.490 35.690

b. If currently authorized for a subset of clinical uses under 35.300, provide documentation on additional required supervised case experience. The table in section 3.c. may be used to document this experience. Also provide completed Part II Preceptor Attestation.

c. If currently authorized under 35.490 or 35.690 and requesting authorization for 35.396, provide documentation on classroom and laboratory training, supervised work experience, and supervised clinical case experience. The tables in sections 3.a., 3.b., and 3.c. may be used to document this experience. Also provide completed Part II Preceptor Attestation.

AUTHORIZED USER TRAINING AND EXPERIENCE AND PRECEPTOR ATTESTATION (continued)

3. Training and Experience for Proposed Authorized User

a. Classroom and Laboratory Training 35.390 35.392 35.394 35.396

Description of Training	Location of Training	Clock Hours	Dates of Training*
Radiation physics and instrumentation	KANSAS CITY MISSOURI	25	SEP 24, 2005 TO OCT 1, 2005
Radiation protection	"	25	"
Mathematics pertaining to the use and measurement of radioactivity	"	10	"
Chemistry of byproduct material for medical use	"	10	"
Radiation biology	"	10 10	"
Total Hours of Training:		80	

b. Supervised Work Experience 35.390 35.392 35.394 35.396

If more than one supervising individual is necessary to document supervised training, provide multiple copies of this page.

Supervised Work Experience		Total Hours of Experience:	
		100	Hours.
Description of Experience Must Include:	Location of Experience/License or Permit Number of Facility	Confirm	Dates of Experience*
Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys	Cabell Huntington Hosp + AACE Nuclear Course	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9-24-05 to 10-1-05
Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters	Cabell Huntington Hosp + AACE Nuclear Course	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9/4/08 to 2/2/09
Calculating, measuring, and safely preparing patient or human research subject dosages	Cabell Huntington Hosp + AACE Nuclear Course	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	↓
Using administrative controls to prevent a medical event involving the use of unsealed byproduct material	Cabell Huntington Hosp + AACE Nuclear Course	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Using procedures to contain spilled byproduct material safely and using proper decontamination procedures	Cabell Huntington Hosp + AACE Nuclear Course	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

AUTHORIZED USER TRAINING AND EXPERIENCE AND PRECEPTOR ATTESTATION (continued)

3. Training and Experience for Proposed Authorized User (continued)

b. Supervised Work Experience (continued)

Supervising Individual <p style="font-size: 1.2em; margin: 0;">ABID YAQUB MD</p>	License/Permit Number listing supervising individual as an authorized user
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Supervising individual meets the requirements below, or equivalent Agreement State requirements (check all that apply)**:

- | | | |
|--|--|--|
| <input type="checkbox"/> 35.390 | With experience administering dosages of: | |
| <input checked="" type="checkbox"/> 35.392 | <input checked="" type="checkbox"/> Oral NaI-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries) | |
| <input checked="" type="checkbox"/> 35.394 | <input checked="" type="checkbox"/> Oral NaI-131 in quantities greater than 1.22 gigabecquerels (33 millicuries) | |
| <input type="checkbox"/> 35.396 | <input type="checkbox"/> Parenteral administration of beta-emitter, or photon-emitting radionuclide with a photon energy less than 150 keV requiring a written directive is required | |
| | <input type="checkbox"/> Parenteral administration of any other radionuclide requiring a written directive ? | |

** Supervising Authorized User must have experience in administering dosages in the same dosage category or categories as the individual requesting authorized user status.

c. Supervised Clinical Case Experience

If more than one supervising individual is necessary to document supervised work experience, provide multiple copies of this page.

Description of Experience	Number of Cases Involving Personal Participation	Location of Experience/License or Permit Number of Facility	Dates of Experience*
Oral administration of sodium iodide I-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries)	3	Cable Huntington Hospital	11/12/08 + 11/13/08 + 11/19/08
Oral administration of sodium iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries)	3	Santa Rosa Hospital Cable Huntington Hospital	10-15-08 + 12-18-08 +
Parenteral administration of any beta-emitter, or photon-emitting radionuclide with a photon energy less than 150 keV for which a written directive is required			<div style="border: 1px solid black; padding: 2px; display: inline-block;"> 9/17/08 to 2/27/09 </div>
Parenteral administration of any other radionuclide for which a written directive is required			
<hr style="width: 80%; margin: 0;"/> <p style="font-size: 0.8em; margin: 0;">(List radionuclides)</p>			

AUTHORIZED USER TRAINING AND EXPERIENCE AND PRECEPTOR ATTESTATION (continued)

3. Training and Experience for Proposed Authorized User (continued)

c. Supervised Clinical Case Experience (continued)

Supervising Individual ABID YAQUB MD	License/Permit Number listing supervising individual as an authorized user
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Supervising individual meets the requirements below, or equivalent Agreement State requirements (check all that apply)**:

- 35.390 With experience administering dosages of:
- 35.392 Oral NaI-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries)
- 35.394 Oral NaI-131 in quantities greater than 1.22 gigabecquerels (33 millicuries)
- 35.396 Parenteral administration of beta-emitter, or photon-emitting radionuclide with a photon energy less than 150 keV requiring a written directive is required
- Parenteral administration of any other radionuclide requiring a written directive

** Supervising Authorized User must have experience in administering dosages in the same dosage category or categories as the individual requesting authorized user status.

d. Provide completed Part II Preceptor Attestation.

PART II – PRECEPTOR ATTESTATION

Note: This part must be completed by the individual's preceptor. The preceptor does not have to be the supervising individual as long as the preceptor provides, directs, or verifies training and experience required. If more than one preceptor is necessary to document experience, obtain a separate preceptor statement from each.

By checking the boxes below, the preceptor is attesting that the individual has knowledge to fulfill the duties of the position sought and not attesting to the individual's "general clinical competency."

First Section

Check one of the following for each requested authorization:

NOT APPLICABLE

For 35.390:

Board Certification

I attest that _____ has satisfactorily completed the training and experience

Name of Proposed Authorized User

requirements in 35.390(a)(1).

OR

Training and Experience

I attest that _____ has satisfactorily completed the 700 hours of training

Name of Proposed Authorized User

and experience, including a minimum of 200 hours of classroom and laboratory training, as required by 10 CFR 35.390 (b)(1).

AUTHORIZED USER TRAINING AND EXPERIENCE AND PRECEPTOR ATTESTATION (continued)

Preceptor Attestation (continued)

First Section (continued)

For 35.392 (Identical Attestation Statement Regardless of Training and Experience Pathway):

I attest that TIPU FAIZ MUHAMMAD ^{SALIM} has satisfactorily completed the 80 hours of classroom
Name of Proposed Authorized User

and laboratory training, as required by 10 CFR 35.392(c)(1), and the supervised work and clinical case experience required in 35.392(c)(2).

For 35.394 (Identical Attestation Statement Regardless of Training and Experience Pathway):

I attest that TIPU FAIZ MUHAMMAD ^{SALIM} has satisfactorily completed the 80 hours of classroom
Name of Proposed Authorized User

and laboratory training, as required by 10 CFR 35.394 (c)(1), and the supervised work and clinical case experience required in 35.394(c)(2).

Second Section

I attest that TIPU FAIZ MUHAMMAD ^{SALIM} has satisfactorily completed the required clinical case
Name of Proposed Authorized User

experience required in 35.390(b)(1)(ii)G listed below:

- Oral NaI-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries)
- Oral NaI-131 in quantities greater than 1.22 gigabecquerels (33 millicuries)
- Parenteral administration of beta-emitter, or photon-emitting radionuclide with a photon energy less than 150 keV requiring a written directive is required
- Parenteral administration of any other radionuclide requiring a written directive

Third Section

I attest that TIPU FAIZ MUHAMMAD ^{SALIM} has satisfactorily achieved a level of competency to
Name of Proposed Authorized User

function independently as an authorized user for:

- Oral NaI-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries)
- Oral NaI-131 in quantities greater than 1.22 gigabecquerels (33 millicuries)
- Parenteral administration of beta-emitter, or photon-emitting radionuclide with a photon energy less than 150 keV requiring a written directive is required
- Parenteral administration of any other radionuclide requiring a written directive

AUTHORIZED USER TRAINING AND EXPERIENCE AND PRECEPTOR ATTESTATION (continued)

Fourth Section

For 35.396:

NOT APPLICABLE

Current 35.490 or 35.690 authorized user:

I attest that _____ is an authorized user under 10 CFR 35.490 or 35.690
Name of Proposed Authorized User

or equivalent Agreement State requirements, has satisfactorily completed the 80 hours of classroom and laboratory training, as required by 10 CFR 35.396 (d)(1), and the supervised work and clinical case experience required by 35.396(d)(2), and has achieved a level of competency sufficient to function independently as an authorized user for:

Parenteral administration of any beta-emitter, or photon-emitting radionuclide with a photon energy less than 150 keV for which a written directive is required

Parenteral administration of any other radionuclide for which a written directive is required

OR

Board Certification:

I attest that _____ has satisfactorily completed the board certification
Name of Proposed Authorized User

requirements of 35.396(c), has satisfactorily completed the 80 hours of classroom and laboratory training required by 10 CFR 35.396 (d)(1) and the supervised work and clinical case experience required by 35.396(d)(2), and has achieved a level of competency sufficient to function independently as an authorized user for:

Parenteral administration of any beta-emitter, or photon-emitting radionuclide with a photon energy less than 150 keV for which a written directive is required

Parenteral administration of any other radionuclide for which a written directive is required

Fifth Section

Complete the following for preceptor attestation and signature:

I meet the requirements below, or equivalent Agreement State requirements, as an authorized user for:

35.390 35.392 35.394 35.396

I have experience administering dosages in the following categories for which the proposed Authorized User is requesting authorization.

Oral NaI-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries)

Oral NaI-131 in quantities greater than 1.22 gigabecquerels (33 millicuries)

Parenteral administration of beta-emitter, or photon-emitting radionuclide with a photon energy less than 150 keV requiring a written directive is required

Parenteral administration of any other radionuclide requiring a written directive

Name of Preceptor

ABID YAQUB

Signature

ABID YAQUB

Telephone Number

304-691-1095

Date

2/4/09

License/Permit Number/Facility Name



American Association of Clinical Endocrinologists

1000 Riverside Avenue • Suite 205 • Jacksonville, Florida 32204 • Phone: (904) 353-7878 • Fax: (904) 353-8185 • <http://www.aace.com>

October 5, 2005

Tipu Saleem, MD
444 Chalfont Place
Reading, PA 19606

Dear Dr. Saleem:

The American Association of Clinical Endocrinologists (AACE) certifies that you successfully completed the following educational activity:

Program Title: AACE Nuclear Medicine Course
Date: September 24-October 1, 2005
Location: Kansas City, MO
Awarded: 80.25 category 1 credit(s) toward the AMA Physician's Recognition Award

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

The American Association of Clinical Endocrinologists designates this educational activity for a maximum of **80.25** category 1 credits toward the AMA Physician's Recognition Award. Each physician should claim only those credits that he/she actually spent in the activity.

Please feel free to contact the AACE office if you have any questions.

Sincerely,

AACE CME Department

TIPU FRZ M Saleem
List of ppts Treated with I-131 Therapy

Patient Initials	Facility	Diagnosis	Date	I-131 Dose
T.J. V,	Cable Huntington Hospital	Thyroid CA	10/15/08	150 mCi
F W,	Cable Huntington Hospital	Thyroid CA	12/18/08	98 mCi
MH,	Cable Huntington Hospital	Thyroid CA	1/2/09	150mCi
R V,	Cable Huntington Hosp	Toxic MNG	11/12/08	20 mCi
PB,	Cable Huntington Hosp	Graves'	11/13/08	20 mCi
D A D,	Cable Huntington Hosp	Toxic MNG	11/19/08	15 mCi

**AACE Nuclear Medicine Course
September 24-October 1, 2005**

Program Chair: J. Woody Sistrunk, MD, FACE

Saturday, September 24, 2005

7:30 Registration

8:00-9:00am

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 AACE/DTC nuclear medicine course.
3. To develop logical questions for participants to consider as the course begins.

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, isobar.
3. Understand the line of stability.
4. Understand binding energy.

9:20 –10:00am

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.

10:00-11:00am

Logarithmic Review

Larry Cook, Ph.D.

Objectives:

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

11:00am-12:00pm

Radioactivity and Decay

Audrey Wegst, Ph.D.

Objectives:

1. Know the decay equation.
2. Know what $t_{1/2}$ 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.
4. Know the definition of curie, millicurie, microcurie, becquerel
5. Be able to convert from one unit of radioactivity to another.

12:00-1:00pm

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.

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.

1:30-2:00pm

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.

2:00-3:15pm

Production of Radioisotopes

Jay Spicer, M.S.

Objectives:

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

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.

3:45-6:00pm

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 – charge produced in a specified by 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 regulations 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, September 25, 2005

8:00 **Quiz**

8:15-10:15am

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 the emissions of I-131 interact with tissue.

10:15am-12:00pm

Radiation Detectors

Audrey Wegst, Ph.D.

Objectives:

1. Know how gas filled detectors detect radiation and the characteristics of each type of detector.
2. Know how dose calibrators measure radioactivity.
3. Know the regulatory requirements concerning dose calibrators.
4. Know the different types of survey meters and the uses of each.

12:00-1:00pm

Lunch — Video “Radiation Safety: Security”

Objectives:

1. Know how to detect radiation.
2. Be able to recognize the International Radiation Warning sign.
3. Know what a ‘controlled area’ is and security issues involved with controlled areas.

1:00-2:30pm

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 time.

2:30-3:00pm

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.

3:00-4:15pm

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.

4:15-6:00pm

Lab (Counting Efficiency, Background Determination)

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.

6:00pm **Adjournment**

Monday, September 26, 2005

8:00 **Quiz**

8:20-9:15am

Lab (Use of Survey Meters)

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 where 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 check.

9:15-11:00am

Thyroid Imaging and 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 provide a clinical basis for certain complicated clinical situations in Nuclear Endocrinology with respect to hyperthyroidism
4. To review the history and rationale that lead to the development of Nuclear Endocrinology and specifically thyroid cancer.
5. To review ALARA concepts specifically with the thyroid cancer patient in mind.
6. To provide a clinical basis for certain complicated clinical situation in Nuclear Endocrinology with respect to thyroid cancer.

11:00am-12:00pm

Lab (Laboratory Survey Techniques)

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

12:00-1:00pm

Lunch — Video "Iodine-131 Therapy: Procedures for Nurses"

Objectives:

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

1:00-2:15pm

Scintillation Detectors

Joel McAllister, M.S.

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.

2:15-3:15pm

Pulse Height Analysis

Joel McAllister, M.S.

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.

3:15-5:00pm

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.

5:00-6:00pm

Lab (Dose Calibrator Tests)

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

6:00pm **Adjournment**

Tuesday, September 27, 2005

8:00am **Review**

8:30am **Quiz**

9:15-10:15am

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.

10:15-11:00am

Lab (Dose Calibrator Tests)

1. Know how to perform, and practice, a linearity test using decay of isotope.
2. Know how to perform, and practice, a linearity test using the Cal-Check system.
3. Know, and practice, how to plot data to determine linearity.

11:00am-12:00pm

Thyroid Uptakes

Joel McAllister, M.S.

Objectives:

1. Know the procedure 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.

12:00-1:00pm

Lunch — Video “Brachytherapy: Procedures for Nurses”

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.

1:00-2:00pm

Thyroid Uptakes and Pitfalls

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.

2:00-3:00pm

Iodine-131 in the Treatment of Graves and Thyroid Cancer

David Preston, Ph.D.

Objectives:

1. Know which patients are not appropriate for I-131 treatment of hyperthyroidism.
2. Know the regulatory limitations in your area for treatment of hyperthyroidism and thyroid cancer with Iodine-131
3. Know the prior requirements to be met before F18 FDG PET scanning of thyroid cancer will be reimbursed.
4. Know the comparative safety of Iodine-131 to surgical and long-term treatment.
5. Know the radiation health issues in the use of Iodine-131 for treatment of hyperthyroidism and thyroid cancer.

3:00-6:00pm

Lab

(Well Counter, Pulse Height Spectra

Thyroid Uptake, Thyroid Assay

ALARA, Sample Counting)

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 using computerized equipment.
5. Observe how wipe test samples are counted with a computerized well counter.

6:00pm **Adjournment**

Wednesday, September 28, 2005

8:00am **Review**

8:30am **Quiz**

9:15-10:15am **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.

10:15am-12:00pm

Radiation Biology III

Ben Friesen, Ph.D.

Objectives:

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

12:00-1:00pm

Lunch — Video “General Radiation Safety I”

Objectives:

1. Introduction to personnel dosimetry.
2. Introduction to film badge records.
3. Know the different types of personnel dosimetry devices.

1:00-2:00pm

Radiation Dosimetry: External, Internal

Ben Friesen, Ph.D.

Objectives:

1. Understand the proper use of personnel dosimetry – TLD’s and/or film.
2. Know the definition of ‘weighting factor’.
3. Know how organ specific distribution of a radioactive compound determine total risk.

2:00-3:15pm

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

Joel

McAllister, M.S.

Objectives:

1. Know the inverse square law.
2. Know the principles of radiation shielding.
3. Know the principles of Time, Distance, and Shielding.
4. Know the difference between shielding for 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.

3:15-3:45pm

Required Monitoring for External Radiation

Audrey Wegst, Ph.D.

Objectives:

1. Know the difference between a shallow dose and a deep dose.
2. Know how shallow dose 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.

3:45-4:30pm

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.

4:30-5:00pm

Monitoring for Internal Contamination Thyroid Bioassays

Audrey Wegst, Ph.D.

Objectives:

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

5:00-6:00pm

Lab (Area Surveys, Wipe Tests, Spill Procedures)

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, September 29, 2005

8:00ama **Quiz**

8:30-9:30am

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 racer kinetics.
3. Understand how the mass of a radioactive isotope allows competition with the stable form of the same element.

9:30-10:30am

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

10:30-11:30am

Measurement of Dose and Proper Records

Audrey Wegst, Ph.D.

Objectives:

1. Know how to measure the dose administered to a 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).

11:30am-12:00pm

Lab (Proper Administration of Dose)

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.

12:00-1:00pm

Lunch — Video “Pregnancy and the Radiation Worker”

Objectives:

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

1:00-2:00pm

Example Problems

Larry Cook, Ph.D.

Objectives:

6. The main objective is to solve numerical problems using the concepts previously introduced.
7. Radioactive Decay (Logarithm and exponential)
 - i. Half-life
 - ii. Counting rates and associated variance.
 - iii. Minimum detectable activity.
 - iv. Minimum count time to detect a specified amount of radioactivity.
8. The Chi-Square test.
9. The t-test.

2:00-3:15pm

Regulatory Agencies and Agreement States

Audrey Wegst, Ph.D.

Objectives:

1. Know the jurisdiction of the Nuclear Regulatory Commission
2. Know what are agreement states.
3. Know who will have regulatory authority over YOU.

3:15-4:15pm

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 iodine allergies and the effect diagnostic doses may have.
5. List at least 10 foods or drugs that are known to interfere with thyroid uptake of radioiodine.

4:15-5:15pm

Radiopharmaceuticals in Nuclear Medicine

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.

5:15-6:00pm

Lab (Radioactive Package Receipt and Return)

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.
4. Be able to identify 10 radiopharmaceuticals used in nuclear medicine departments.

6:00pm **Adjournment**

Friday, September 30, 2005

8:00am **Quiz**

8:30-9:30am

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.

9:30-10:15am

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.

10:15am-1:00pm

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.

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.

1:00-2:00pm

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 managements responsibility is to the ALARA program.

2:00-3:15pm

QMP Program

Joel McAllister, M.S.

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

3:15-5:30pm

Patient Release, NRC and states

Joel McAllister, M.S.

Objectives:

10. Know when it is permissible for you to release a patient treated with Iodine-131.
11. Know the NRC rules governing patient release.
12. Know the methods acceptable for compliance with NRC rules governing patient release.
13. Know under what circumstances patients treated with Iodine-131 cannot be released.
14. Be familiar with the patient release form.

5:30-6:00pm

Spill Procedure Lab

Audrey Wegst, Ph.D.

Objectives:

1. Know how, and 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 requirement 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, October 1, 2005

8:00am **Review and Questions**

8:30-10:15am

Review of Essential Records for License Compliance

Audrey Wegst, Ph.D.

Objectives:

1. Know what records the NRC requires 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 and ALARA program.
5. Know how to conduct a facility review of the ALARA program.

10:15am–12:00pm

Regulations, Variations 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. Observe the use of Florida as an agreement state to show examples of possible differences with NRC.

12:00-1:00pm

Lunch — Video “ALARA and the Administrator”

Objectives:

1. Know the basic responsibilities of the facility administrator with respect to radiation safety.
2. Know what a radiation safety committee is and what 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 in an audit.
5. Know what a ‘Management’s Commitment to an ALARA Program’ is.

1:00-4:15pm

Tour of Nuclear Medicine Department University of Kansas Medical Center

Objectives:

1. Gain first hand experience of a working hot lab.
2. Gain experience with the different forms of Iodine-131 (Liquid vs. pill)
3. Gain experience with a computerized record keeping system.
4. Discuss practical issues involved with administration of therapeutic quantities of radioactive materials.

4:15-6:00pm

Final Exam

6:00pm **Adjournment**

Note: Labs are all conducted under the direction of Audrey Wegst, Ph.D. and most contain multiple faculty members.