Health Physics Society's
2014 Midyear Meeting
Baton Rouge, LA

Nuclear Power Radiation Safety:

Learning from the Past to Protect the Future

Preliminary Program

47th Midyear Topical Meeting of the Health Physics Society

9-12 February 2014 • Baton Rouge River Center - Convention Center

Table of Contents

WELCOME TO BATON ROUGE!

Baton Rouge is one of America's fastest growing cities. From old to new, the avant garde to the antebellum, it's a perfect mix for everyone, with opportunities to explore the history, culture, music, and food. From every direction, everything uniquely Louisiana culminates in the "Red Stick." Dive into the colorful history of Louisiana politics in downtown Baton Rouge at the Old State Capitol and the Old Governor's Mansion, built by legendary Governor Huey P. Long. And while you're here, take a bird's-eye view of the city from the observation deck of the 34-story State Capitol or walk across the street and soak in the culture at the Louisiana State Museum. Take your taste buds on the ultimate culinary ride and unlock the secrets of Louisiana's distinct cuisine in Baton Rouge.

WEATHER

Baton Rouge has a warm temperate climate with hot summers and no dry seasons. The nearby areas are forests, croplands, lakes, rivers, and built-up areas. February has temperatures with a low of 48° and a high of 68°. Bring a light jacket, but be ready to enjoy nice temperatures!

MEETING LOCATION

Baton Rouge River Center Convention Center

275 S River Road, Baton Rouge, LA 70802

TRANSPORTATION

The Hilton Baton Rouge Convention Center is only 8 miles from the Baton Rouge Metropolitan/Ryan Field Airport, and 70 miles from the New Orleans International (Moisant Field) Airport. There is a complimentary bus from the Baton Rouge airport, and about a $100 taxi ride from New Orleans.

SUBSTITUTION/CANCELLATION POLICY

Substitutions of meeting participants may be made at any time without penalty. All conference and tour cancellations must be in writing and must reach the HPS Office by 9 January to receive a refund. All refunds will be issued after the meeting minus a $50 processing fee. Refunds will not be issued to no-shows.

HEADQUARTERS HOTEL

Hilton Baton Rouge Capitol Center

Enjoy the historic surroundings of the Hilton Baton Rouge Capitol Center hotel, 201 Lafayette Street, Baton Rouge, Louisiana 70801. Located downtown, the hotel is adjacent to the Shaw Center and the River Center Convention Center, less than five minutes to the Louisiana State Capitol and 3 miles from Louisiana State University. Take the complimentary shuttle to and from the airport and within a five-mile radius of our hotel. Breathe easy in our smoke-free environment.

Click **here** for the HPS hotel reservation link. The rate for the HPS block is $118, and the deadline for hotel registration is 16 January, or until the HPS block is sold.

OVERFLOW HOTEL

Hotel Indigo Baton Rouge Downtown

Please contact the Hotel Indigo for reservations. This overflow hotel is across from the Convention Center, at 200 Convention Street, Baton Rouge, LA 70801. Please call them directly and mention the HPS Meeting, 225-343-1515, or 877-270-1392. The room rate is also $118.

The 2014 Midyear Meeting
is presented by the
Health Physics Society
and co-sponsored by the
Deep South Chapter

FOR REGISTERED COMPANIONS

Companion Registration includes Monday-Wednesday breakfast buffet and Welcome Reception at the Hilton Baton Rouge, and Exhibitor Reception at the Baton Rouge River Center

WELCOME RECEPTION

Sunday, 9 February

6:00-7:30 PM Hilton Baton Rouge Capitol Center

EXHIBITOR RECEPTION

Monday, 10 February

5:00-6:30 PM Baton Rouge River Center

TECHNICAL TOUR

Tuesday, 11 February

Laser Interferometer Gravitational-Wave Observatory

2:00-4:00 PM Preregistration $25/Onsite $30

The Laser Interferometer Gravitational-Wave Observatory (LIGO) is a facility dedicated to the detection of cosmic gravitational waves and the measurement of these waves for scientific research.

Center for Advanced Microstructures and Devices at LSU

3:00-5:00 PM Preregistration $25/Onsite $30

CAMD is a Research Center where Synchrotron Light is used for:

- Energy - Developing new materials for fuel production - DOE Energy Frontier Research Center
- Environment - Understanding toxic byproducts of combustion – NIEHS Superfund project
- Medical/Biomedical - Developing new drugs and treatments Killing Cancer with a new more-effective radiation therapy - A US Army Medical Research funded Project with Mary Bird Perkins Cancer Center
- Microfabrication - Developing the new micromachines of the future Participants will tour the facility, talk about what is a synchrotron as well as have research groups talk about their own research

OOPS!

We cancelled it because we didn't know you wanted it!

Sometimes excellent courses with super instructors are cancelled when too many people wait until the last minute to register. We need a minimum number of participants enrolled before a class can take place in order to cover costs. This applies to tours as well as classes. Don't wait - avoid disappointment - Register Early!

REGISTRATION

Registration Hours

Sunday 9 February . . . . . 3:30-5:30 PM
Monday 10 February. . . . . 7:30 AM-3:00 PM
Tuesday 11 February. . . . . 8:00 AM-3:00 PM
Wednesday 12 February . . . . . 8:00 AM-1:00 PM

Registration Information

- Preregistration Deadline: 21 January 2014
- Registration fees for members and non-members include the Welcome Reception, Exhibitor Reception and lunches on Monday and Tuesday.
- Purchase orders are not accepted for PEP, AAHP or Tour Registration

Register now to reserve your place!

Register online at www.hps.org

OR:

Register by fax: Fax your completed form with credit card information to (703) 790-2672

OR BY MAIL:

Mail your completed form with payment to:
HPS Headquarters
1313 Dolley Madison Blvd., Suite 402
McLean, VA 22101

Mail completed registration form with a check made payable to Health Physics Society, purchase order or credit card information. You are considered registered when full payment or purchase order has been received.

Again this Year

The Professional Enrichment Program (PEP) handouts for the Midyear Meeting will not be available in hard copy. For those who pre-register, you will be provided with an access code for downloading the handouts approximately two weeks prior to the meeting. For those who register for courses on-site, you will be provided the code when you register.

EXHIBITS

Exhibit Hours

AM & PM Breaks are in Exhibit Hall

Monday . . . . . 9:45 AM-6:30 PM
Monday . . 12:15-1:15 PM Complimentary Lunch
Monday . . . . . 5:00-6:30 PM Opening Reception

Tuesday . . . . . 9:45 AM-4:00 PM
Tuesday . . Noon-1:15 PM Complimentary Lunch

2014 Meeting Exhibitors

(as of November 2014)

To request a booth for the Midyear Topical Meeting,
contact Lori Strong at HPS Headquarters, Exhibits@HPS.com

Ameriphysics
Best Medical
Bionomics
Canberra
Chase Environmental
CHP Consultants
Dade Moeller
Eckert & Ziegler
Energy Solutions
F&J Specialty Products
Fuji Electric Corp. of America
G/O Corporation
Hi-Q
Hopewell Designs
JL Shepherd
K&S Associates
Lab Impex
Lab Logic Systems
Landauer
Laurus Systems
Ludlum
Mirion
Ortec
Philotechnics
QAL-TEK
Radeco
Radiation Safety Assoc
Radiation Safety & Control Services (RSCS)
Saphymo GmbH
SE International
Technical Associates
Teletrix
Thermo Fisher
Tracerco

Is your Committee meeting at the Midyear?
Contact Jennifer Rosenberg at **JRosenberg@BurkInc.com**
to set up your times!

Preliminary Technical Program

If a paper is going to be presented by other than the first author, the presenter's name has an asterisk (*)

All Sessions will take place in the Baton Rouge River Convention Center

MONDAY

7:15-8:15 am

CEL 1 A Novel Reactor Design Using a Berylium Moderated, Light Water Cooled Natural Uranium Core

Robert Hayes; MIT Physics

8:15 - 12:00 PM

MAM-A Plenary Session: Radiation Protection: Current Regulatory and Legal Issues

8:15 AM **MAM-A.1**

Introduction

Fisher, Darrell

President, Health Physics Society

8:30 AM **MAM-A.2**

Discussion

Cassidy, Bill

Representatitve

8:45 AM **MAM-A.3**

Nuclear Power's Future and the Critical Role of Radiation Safety

Koehl, D.

South Texas Project Nuclear Operating Company

9:30 AM **MAM-A.4**

That Was Then, But This Is Now!

Poston, J.

Texas A&M

10:15 AM **BREAK**

10:45 AM **MAM-A.5**

Radiation Protection - Challenges and Directions

Cool, D.

US NRC

11:15 AM **MAM-A.6**

The Health Physicist's Role in the Just and Scientific Resolution of Radiation Litigation

Johnson, R. ***(G. William Morgan Lectureship)***

King and Spaulding LLP

12:15-1:15 PM **Exhibit Hall**

Complimentary Lunch for Registered Attendees

1:15 - 2:45 PM

Poster Session

P.1 Design of a Contour Collimation System for Murine Irradiation

Uhlemeyer, J., Ford, J.

TAMU

P.2 Radioactivity Studies on Farmlands and Farm Products Produced Around a Nuclear Plant

Quaye, D., Didla, S., Brempong, O., Dordor, M., Billa, J., Adzanu, S.

Alcorn State University

P.3 Fabrication and Characterization of Cadmium Zinc Telluride (CdZnTe) Crystal for Radiation Measurement and Detection Applications

Tsorxe, I., Makobongo, F., Buliga, V., Groza, M., Matei, L., Babalola, S., Billa, J., Adzanu, S.

Alcorn State University, Morehouse College, Fisk University, Alabama A & M University

P.4 Assessment and Comparison of Self-Attenuation Coefficients of Vegetation Samples using Standard Electrode and Lowe Energy Germanium Detectors

Didla, S., Heard, J., Billa, J., Adzanu, S., Carradine, M.

Alcorn State University

2:45 PM - 4:30 PM

MPM-A Emergency Response

Chair: Robert Hayes

2:45 PM **MPM-A.1**

RAP Region 4 Consequence Management Training with a Real Plume Footprint

Hayes, R., Beekman, M., Akbarzadeh, M.

WIPP

3:15 PM **MPM-A.2**

Radiological and Non-Radiological Factors Considered in Establishing Protective Action Guidance for Drinking Water; Lessons Learned from Fukushima Nuclear Accidents

Jeon, I.
Korea Institute of Nuclear Safety

3:30 PM **MPM-A.3**

Health Physics Society Response to Nuclear Incidents

Dickson, H., Classic, K., Roessler, G., Baes, F., Walchuk, M., Hartman, M., Wahl, L., East, J., Hebl, S.
Web Operations

3:45 PM **MPM-A.4**

Proposed Revisions to PAG Manual: Implementation & Implications

DeCair, S.
US Environmental Protection Agency

4:00 PM **MPM-A.5**

RadResponder for Emergency Data Management

DeCair, S., Crawford, S., Blumenthal, D., Allen, B.
US Environmental Protection Agency, Federal Emergency Management Agency, US Department of Energy, ChainBridge Technologies

4:15 PM **MPM-A.6**

Radioactive Concentration Measurement of Environmental Water within High Dose Rate Area in Fukushima, Japan

Umezawa, K.
Fukushima University

5:00-6:30 pm **Exhibit Hall**

Exhibitor Opening Reception

Have you submitted your abstract for the 2014 HPS Annual Meeting?

Abstract Deadline:
7 February 2014
http://hpschapters.org/2014AM/abstracts/index.php

Join us in Baltimore, Maryland
13-17 July 2014

TUESDAY

7:15-8:15 am

CEL 2 Nuclear Reactor Radiation Shielding

Ed Waller; University of Ontario Institute of Technology

8:30 AM - Noon

TAM-A ALARA

Co-Chairs: Lorraine Marceau-Day, Eric Goldin

8:30 AM TAM-A.1

Nuclear Power Plant Data Analysis for InLight LDR Model 2 Dosimeter

Kirr, M., Passmore, C.

Landauer

8:45 AM TAM-A.2

Practical Applications of the EPRI Alpha guidelines at Humboldt Bay Power Plant

Rowberry, K.C.

Oregon State University

9:00 AM TAM-A.3

Observations from an Intercomparison Study of Active and Passive Dosimeters When Exposed to Reference Conditions

Kirr, M., Passmore, C.

Landauer

9:15 AM TAM-A.4

Decommissioning Experience at the Kewaunee Power Station

Shannon, D.

Dominion Energy - Kewaunee

9:30 AM TAM-A.5

Minimizing Radon Interference When Measuring Transuranic Activity

Voss, J.

Voss Associates

9:45 AM TAM-A.6

Diving for Success - Underwater Steam Generator Internal Cutup

Enright, S., Cooper, T., Goldin, E., Sewell, S.*

Alpha Associates Group, Southern California Edison

10:00 AM BREAK

10:30 AM TAM-A.7

Apparent Enhancement of Radiological Controls by Metallurgical Fusion of Loose Surface Contamination during High-Temperature Thermal Cutting of Highly Contaminated Reactor Coolant System Components

Keeney, N.

HazMat CATS, LLC.

10:45 AM TAM-A.8

The Commencement of a Health Physicist

Hamideh, A.M., Wang, W.-H.

Louisiana State University

11:00 AM TAM-A.9

Assessing the Contributions of Internal Shielding Elements in a 7.5T Multi-Pole Wiggler

Marceau-Day, M.L.

Louisiana State University

11:15 AM TAM-A.10

Oil and Gas NORM Injection Disposal - The Industry Standard

Hebert, M.

Newpark Environmental Services

Noon - 1:15 pm Exhibit Hall

Complimentary Lunch for Registered Attendees

1:15 - 3:15 PM

TPM-A Regulation Issues - Special Session

Co-Chairs: Cheryl Olson, Mark Miller

1:15 PM TPM-A.1

Pursuit of Excellence in Radiation Protection

Olson, C., Pushee, K.

INPO

1:30 PM TPM-A.2

Moving Radiation Protection from LNT to a More Science-Based Foundation

Miller, M., Osborn, D.

Sandia Laboratories

1:45 PM TPM-A.3

Health Physics Society Positions and Nuclear Power

Vetter, R.

Health Physics Society

2:00 PM **TPM-A.4**

When Nuclear Power Plant Portal Alarms Are Set off by Nuclear Medicine Patients

*Brunette, J.J., Vetter, R.J.**

Mayo Clinic, Health Physics Society

2:15 PM **TPM-A.5**

Issues for Revision of NRC Radiation Protection Regulations

Cool, D.

US Nuclear Regulatory Commission

3:15 PM **BREAK**

3:45 - 5:00 PM

TPM-B Fukushima and Related

Chair: Frazier Bronson

3:45 PM **TPM-B.1**

Lessons Learned from In-Vivo Measurement Experiences in the Aftermath of TMI, Chernobyl, and Fukushima

Bronson, F.L.

Canberra

4:00 PM **TPM-B.2**

Food Measurement Experiences and Lessons Learned in Response to the Fukushima NPP Accident

Bronson, F.L.

Canberra

4:15 PM **TPM-B.3**

Social Media and Fukushima: Separating Myth from Reality

Mahathy, J.

ORAU

4:30 pm **TPM-B.4**

Enhancement of Radiation Measurement Equipment after Fukushima Accident

Oyama, S., Akashi, M., Yamauchi , H.*

FUJI Electric

4:45 pm **TPM-B.5**

Basis for Sentiments Against Nuclear Power

Johnson, R. H.

Radiation Safety Counseling Institute

WEDNESDAY

7:15-8:15 am

CEL 3 Interpretation of Radiation Measurements

Ray Johnson; Dade Moeller Training Academy

8:30 - 11:30 AM

WAM-A Instrumentation

Co-Chairs: James Voss, Joseph Shonka

8:30 AM **WAM-A.1**

Interpretation of Radiation Measurements

Johnson, R.

Dade Moeller Training Academy

8:45 AM **WAM-A.2**

The E-ATMFD: Economical Acoustically Tensioned Metastable Fluid Detector - Neutron Sensor for Health Physics

Fischer, K., Hagen, A., Rogers, S., Archambault, B., Taleyarkhan, R.P.

Purdue University Nuclear Engineering, Sagamore Adams Labs, LLC

9:00 AM **WAM-A.3**

A New Kind of Gamma and Neutron Radiation Pager Applied to Dose Rate Measurements - an Interesting Alternative to Conventional Health Physics Instrumentation

Iwatschenko-Borho, M., Leder, E., Trost, N.

Thermo Fisher Scientific, Erlangen, Fisher Scientific, Erlangen

9:15 AM **WAM-A.4**

Nuclear Power Plant Applications using Temperature-Stabilized Large Volume CeBr Detectors

Nakazawa, D., Bronson, F.

Canberra Industries

9:30 AM **WAM-A.5**

How to Improve Confidence in Your Radiological Reports

Voss, J.

Voss Associates

9:45 AM **WAM-A.6**

The Need for Performance Testing of Contamination Surveys

Shonka, J.

SRA

10:00 AM **BREAK**

10:30 AM **WAM-A.7**

Remote Monitoring 2020 Vision

Menge, J.

FUJI Electric

10:45 AM **WAM-A.8**

Efficiency Modeling of CZT Detectors for Quantitative Spectrometric Assays

Mueller, W.F., Bronson, F., Ilie, G., Menaa, N.

Canberra Industries

11:00 AM **WAM-A.9**

Calibration of Lanthanum Bromide Scintillation Detectors

Abbas, M.

Professor of Radiation Physics

11:15 AM **WAM-A.10**

Angle and Energy Response to Alpha Particles of Imaging Plates

Chen, B., Zhuo, W., Kong, Y.

Fudan University, China

11:30 AM - Noon

WAM-B Air Sampling

Chair: Mel Hebert

11:30 AM **WAM-B.1**

Optimization of Aiborne Effluent Sampling Systems for Nuclear Power Plants

Menge, J.

Fuji Electric

11:45 AM **WAM-B.2**

Radon Flux Measurements Using Electret Ion Chambers

Hebert, M., Kotrappa, P., Stieff, F.

Newpark Environmental Services, Rad Elec, Inc.

12:15 - 1:15 pm **Lunch Break**

1:15 - 03:45 PM

WPM-A Dosimetry

Chair: Eugene Carbaugh, Chris Passmore

1:15 PM **WPM-A.1**

A Standard for Radiologically-Contaminated Wound Management

Carbaugh, E.

Dade Moeller and Associates

1:30 PM **WPM-A.2**

The Need for a Technical Basis Document for Reconstruction of Aircrew Exposures to Radiation

Shonka, J., Bramlitt, E.
SRA

1:45 PM **WPM-A.3**

Neutron Field Characterization Study of a Dry Cask Storage Independent Spent Fuel Storage Installation (ISFSI) Campaign

Passmore, C., Kirr, M., Vickers, G., Weibel, K.
Landauer, Exelon

2:00 PM **WPM-A.4**

Risk Perspectives on Eight Selected Radionuclides Relative to the Proposed Yucca Mountain Radioactive Repository

Sun, L.C.

2:15 PM **WPM-A.5**

Beta-Particle Backscatter Factors and Energy Absorption Scaling Factors for Use with Dose-Point Kernel Models

Mangini, C.D., Hamby, D.M., Caffrey, J.A.
Oregon State University

2:30 PM **BREAK**

3:00 PM **WPM-A.6**

The Effects of Pipe Scale Age and Repeated Occupational Inhalation on Effective Dose from Pipe Scale TE-NORM

Eyers, B., Roman, M., Kearfott, K.
University of Michigan

3:15 PM **WPM-A.7**

Meeting New Requirements for Dose to the Lens of the Eye

Chase, W.J.
Ontario Power Generation

3:30 PM **WPM-A.8**

Centrifugally Tensioned Metastable Fluid Detector (CTMFD) Technology for Gamma Blind Neutron Dosimetry, Alpha Detection, and Radon Monitoring

Webster, J.A., Reames, R., Rogers, S., Archambault, B., Taleyarkhan, R.P., Kirkham, T.
Purdue University Nuclear Engineering, Purdue University

Join us in Baltimore, Maryland
13-17 July 2014

AAHP1 Radiation Protection with Alpha Particle Emitters

Frazier, J., Littleton, M.

This 8-hour course will address all aspects of radiation protection from alpha-particle emitters. Sessions will address basic and advanced concepts, including: properties of naturally-occurring and manmade sources of alpha-particle emitters; physical properties of alpha particles and their associated interactions with matter; detection and measurement of alpha particles as surface or airborne contamination; and laboratory analysis of samples. The course will also include sessions on bioassay and internal dosimetry of alpha emitters. Additionally, there will be sessions on the details of operational health physics programs where alpha emitters may be of concern. These latter sessions will include discussions of lessons learned at facilities having very high levels of alpha emitters and in operations involving alpha emitters from NORM sources.

This course is designed for health physicists and other personnel working in commercial nuclear power facilities, DOE sites, academic institutions, and industries having NORM concerns. The course will be taught by two long-time (some say old!) CHP's, John Frazier and Michael Littleton, who have many years of experience with radiation protection from alpha-particle emitters in the workplace and in the environment. John and Mike have presented similar courses in the past for nuclear power workers and individuals involved with NORM issues.

AAHP2 8 Hour HAZWOPER Refresher Course

Gaul, W.

The 8 hour HAZWOPER course is designed to refresh the student in topics relevant to hazardous waste operations in accordance with 29 CFR 1910.120(e)(8). The course is intended to fulfill the annual 8 hour training requirements and includes some short exams. The student will receive a Course Certificate upon successful completion of the course. Items covered will include, but not be limited to, review of applicable regulations, health and safety plans, job safety analysis, personnel protective equipment, hazard communication, Globally Harmonized System (GHS), TLV-PEL updates, confined space, fundamentals of chemical hazards, air sampling for chemicals, spill control, engineering controls and decontamination techniques. Also additional topics are covered to update the student on new or upcoming regulatory changes.

Professional Enrichment Program

Sunday 9 February 2014 - 8:00 am-4:00 pm, Baton Rouge River Center, Louisiana

Again This Year...Again This Year

The Professional Enrichment Program (PEP) handouts for the Midyear Meeting will not be available in hard copy. For those who pre-register, you will be provided with an access code for downloading the handouts approximately two weeks prior to the meeting. For those who register for courses on-site, you will be provided the code when you register.

Sunday, 8:00 - 10:00 am

PEP 1-A Fundamentals of Gamma Spectroscopy

David Pan; ORTEC

This course offers a fast-paced review of the basic principles of gamma spectroscopic analysis. The course includes a review of the nature and origins of gamma emitting radioactivity, basic physics of gamma interaction with matter, consequences of gamma interactions on gamma spectra, gamma spectroscopy system components and calibrations, gamma spectroscopy analysis methods, and interpretation of gamma spectroscopy data.

PEP 1-B Training First Responders on Radiological Dispersal Devices (RDDs) and Improvised Nuclear Devices (INDs) Events

Ken Groves; S^2-Sevorg Services

This PEP will present an overview of the current training the author is presenting to First Responders (firefighters, emergency medical technicians, law enforcement and others) who may encounter either a Radiological Dispersal Device (RDD or Dirty Bomb) or an Improvised Nuclear Device (IND) as a part of their Emergency Response activities. The emphasis of the training is putting the radiological/nuclear material in perspective as compared with other Weapons of Mass Destruction (WMD) materials such as chemical and/or biological weapon agents. A goal of the training is to help this First Responder Community understand that under almost all conditions, they can perform their primary mission of "putting out fires, rescuing and treating injured persons, and chasing bad guys" even in the presence of relatively large amount of radiological/nuclear contamination. The rare cases of high activity unshielded sources will be reviewed and explained. Current National/International guidance on dose "limits" will be discussed. The use of information contained in the New NCRP report entitled, "Response to a Radiological or Nuclear Terrorism Incident: A Guide for Decision Makers", NCRP Commentary No. 19, "Key Elements of Preparing Emergency Responder for Nuclear and Radiological Terrorism," and the CRCPD "First Responders Handbook" will be used extensively in the presentation. A discussion of the use of Time, Distance and Shielding as well as appropriate Personal Protective Clothing and how it will provide the needed protection while immediate actions take place early in an RDD/IND event will be reviewed. The use of appropriate radiation detection instrumentation, documented Standard Operating Procedures along with realistic training, drills and exercises are the key to a successful response to an RDD/IND event for this community of critical emergency responders.

PEP 1-C EH&S Bootcamp for Radiation Safety Professionals, Part 1 (of 3)

Robert Emery, Janet Gutierrez; The University of Texas Health Science Center at Houson

It is currently quite rare for organizations to maintain stand-alone radiation safety programs. Resource constraints and workplace complexities have served as a catalyst for the creation of comprehensive environmental health & safety (EH&S) or risk management (RM) programs, which include, among other health and safety aspects, radiation safety programs. But many of these consolidations were not inclusive of staff training to instill an understanding of the areas now aligned with the radiation safety function. This situation is unfortunate because when armed with a basic understanding of the other safety programs, the radiation safety staff can provide improved customer service and address many simple issues before they become major problems. This unique Professional Enrichment Program (PEP) series is designed to address this shortcoming by providing an overview of a number of key aspects of EH&S and RM programs from the perspective of practicing radiation safety professionals who now are involved in a broader set of health and safety issues. The PEP series will consist of three 2 hour segments:

• Part 1 will address "The Basics of Risk Management & Insurance" and "The Basics of Fire & Life

Safety." The risk management & insurance portion of the session will address the issues of retrained risks (those which are not covered by insurance) and transferred risks (those covered by a financial vehicle), and how these aspects impact EH&S and RM operations. Included in the fire & life safety segment will be a discussion on the basic elements of the life safety code and the fire detection and suppression systems. The requirements for means of egress will also be discussed.

• Part 2 will examine "Security 101 for Radiation Safety Professionals" and "The Basics of Biological & Chemical Safety." The first part of this session will focus on security as it is applied in the institutional settings. Various strategies employed to improve security controls will be presented. The second part of the session will address the classification of infectious agents and the various assigned biosafety levels. Aspects of chemical exposures, exposure limits, monitoring and control strategies will also be discussed.

• Part 3 will focus on "Measuring and Displaying Radiation Protection Program Metrics That Matter to Management." Radiation protection programs typically accumulate data and documentation so that regulatory officials can assess compliance with established regulations. The implicit logic associated with this activity is that compliance equates to safety. But in this era of constricted resources, mere regulatory compliance is no longer sufficient to justify all necessary programmatic resources. Radiation protection programs are now expected to readily demonstrate how they add tangible value to the core missions of an organization. The demonstration of this value is expected to be in the form of some sort of performance metrics, but this is an area in which many radiation safety professionals have not been trained. The issue is further compounded by the need to display the metrics in manners that are succinct and compelling, yet another area where formal training is often lacking. This session will first describe a variety of possible radiation protection program performance measures and metrics, and then will focus on the display of the information in ways that clearly convey the intended message. Actual before and after data display "make-overs" will be presented, and ample time will be provided for questions, answers, and discussion.

Each PEP segment is designed so that participants can take any session individually, although the maximum educational benefit will be derived from the participation in all three sessions. The particular topics included in the PEP series have been consistently identified as extraordinarily useful to participants in the highly successful week-long "University of Texas EH&S Academy." Ample time will be allotted for questions, answers and discussion, and each segment will be supplemented with key reference information.

PEP 1-D FRMAC Dose Assessment Methodology as It Relates to the Draft EPA PAG Manual, Part 1

Thomas Laiche; Sandia National Laboratories

The Department of Energy's Federal Radiological Monitoring and Assessment Center (FRMAC) is an asset comprised of representatives of multiple federal agencies that are available on request to support a response to nuclear/radiological accidents and/or emergencies. The FRMAC works with multiple agencies such as the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) to establish consistent radiological dose assessment methods to support public protection guidance provided by the EPA's and FDA's Protective Action Guides (PAG). The revised EPA PAG Manual references the FRMAC Assessment Manual (FAM) for radiological dose assessment methods in support of protective action decisions. This presentation provides an overview of the FRMAC Assessment Manual, describes the default methods for radiological dose assessment and introduces the Turbo FRMAC software tool that automates these assessment methods.

• Part 1: Introduces the Federal Radiological Monitoring and Assessment Center function and organization; Introduces the EPA and FDA Protective Action Guides; Introduces the FRMAC Assessment Manual format and tables; Presents several mathematical concepts used in the dose assessment methods; Introduces the software tool, Turbo FRMAC. Students are encouraged to attend all three sessions as each builds upon lessons and information presented in the previous class.

• Part 2: Presents an overview of the dose assessment methods and mathematical calculations used for Public Protection; Demonstrates the use of the software tool Turbo FRMAC to generate Public Protection dose assessments. This presentation is follow-on to Part 1 and builds on the information presented there.

• Part 3: Presents an overview of the dose assessment methods and mathematical calculations used for the Ingestion Pathway; Demonstrates the use of the software tool Turbo FRMAC to generate ingestion dose assessments. This is a follow-on to Parts 1 & 2.

PEP 1-E Training For ISO17025 Assessments - ISO17025 General Requirements for the Competence of Calibration and Testing Laboratories

Tom Voss; Voss Associates

This PEP class provides the training necessary for an assessor to evaluate, and a laboratory to comply with, the requirements in ISO 17025. A basic requirement of ISO17025 is that the laboratory establish and maintain a quality system that demonstrates the laboratory's compliance with ISO17025. The role of the assessor is to determine if the laboratory complies with those requirements. This training covers the elements in ISO17025 with clarifications and examples.

Sunday, 10:30 am - 12:30 pm

PEP 2-A Fundamentals of Alpha Spectroscopy

David Pan, ORTEC

This course offers a fast-paced review of the basic principles of alpha spectroscopic analysis. The course includes a review of the nature and origins of alpha-particle emitting radioactivity, basic physics of alpha particle interaction with matter, considerations and consequences of sample preparation for alpha spectroscopy, alpha spectroscopy system components and calibrations, and a primer on interpretation of alpha spectroscopy data.

PEP 2-B Introduction to Nuclear Security I

Edward Waller; University of Ontario Institute of Technology

Health physics is an essential function in most nuclear facilities and the primary responsibility is a safety function. Nuclear security is, however, extremely important in the post-9/11 environment for all nuclear facilities. The role of the health physicist in nuclear security matters is not clearly defined despite the fact that a fundamental understanding of radiological hazards of adversary target material is required for understanding the total risk to the facility and/or material. Health physics can be integrated into nuclear security culture during design basis threat definition, through risk management exercises, participation in response force activities, developing dose guidance criteria, radiological training and in communicating hazard and risk to security personnel, facility operators and regulatory bodies. When integrating health physics into nuclear security culture, it is important that health physics management or the responsible/senior health physicist establish dialogue early with nuclear security personnel in generating the design basis threat. The dialogue must include the advantages of considering radiological hazard as part of the comprehensive response plan. Health physicists are multi-capable scientists, engineers and systems integrators that can contribute greatly at multiple levels for effective and efficient nuclear security. To be an effective partner in the nuclear security objective, health physicists must embrace the nuclear security culture. As such, this PEP is an introduction to the basic elements of nuclear security, with specific emphasis on prevention, detection, and response. The following key elements will be covered in the PEP:

1. Prevention is the first strategy used for nuclear security and it consists of all such security measures that may serve as deterrence or prevent unauthorized access to a protected nuclear facility or nuclear material. These preventive security measures could be adopted or implemented at facility level or at State level.

2. Detection is the second strategy used for nuclear security and it consists that may help in detection of unauthorized access by someone to a protected nuclear facility or nuclear material. These detections measures could be implemented at facility level or at State level.

3. Response is the third security strategy used to defeat an adversary by preventing it from accomplishing its tasks either by containment or neutralization. These response measures can also be implemented at Facility level and at State level.

At the end of this PEP, the participant should have a high level overview of nuclear security, and be able to formulate possible roles of the health physicist in security functions. Part II of this PEP will explore and expand upon some important specific areas of nuclear security, mainly design of physical protection systems and information security.

PEP 2-C EH&S Bootcamp for Radiation Safety Professionals, Part 2

Robert Emery and Janet Gutierrez; The University of Texas Health Science Center at Houston

See PEP 1-C

PEP 2-D FRMAC Dose Assessment Methodology as it relates to the Draft EPA PAG Manual, Part 2

Thomas Laiche; Sandia National Laboratories

See PEP 1-D

PEP 2-E Integration of Health Physics into the Medical Management of Radiation Incident Victims

Steve Sugarman; REAC/TS

In the event of a radiation incident it is essential that the radiation dose a patient may, or may not, have received is rapidly assessed so that proper medical treatment can be planned. The initial information needs to be easily obtained to be able to provide a realistic potential

of dose magnitude. Various techniques can be employed to help gather the necessary information needed. Evaluation of nasal swabs and wound counts can help with ascertaining the potential for significant intakes of radioactive materials, and mathematical dose estimations can help with determining the potential magnitude of external doses. Externally contaminated areas must be assessed so that treatment and decontamination priorities can be determined. As time goes on and more information, such as bioassay or biological dosimetry data, is received the health physicist will be called upon to interpret that data and communicate its meaning to the healthcare staff. Support duties can also include assistance with communicating with the patient, other medical staff, or external entities such as regulators and the media. Coupled with a good event history and other data, health physicists and physicians can develop a strategy for providing proper medical care to individuals who may have been involved in a radiological event. It is, therefore, essential that health physicists are able to seamlessly integrate themselves into the patient care environment.

Sunday, 2:00 - 4:00 pm

PEP 3-A Exploring Low Level Counting Statistics

Tom Voss; Voss Associates

This PEP class demonstrates the elements of low level counting statistics with hands-on measurements of low level radioactive sources using simple radiation detectors. Measurements will be made and calculations will be performed. Poisson and Gaussian distributions will be explored. The elements of uncertainty will be discussed and demonstrated.

PEP 3-B Introduction to Nuclear Security II

Edward Waller; University of Ontario Institute of Technology

In Part I of this two part PEP, the basic elements of nuclear security were discussed. In Part II, two very important areas of nuclear security are discussed in detail: (i) physical protection system (PPS), and (ii) IT/Cybersecurity. Physical Protection can be defined as ensuring the detection, delay and response to the malicious acts against nuclear materials and nuclear facilities through an integrated system of people, technology and procedures. Physical protection systems discussion will include concepts, approaches, design and evaluation methodologies for physical protection delay (i.e. barriers), detect (i.e. sensors) and response (i.e. guards). IT/Cybersecurity will be discussed in terms of IT security domains for nuclear operations, and hardware (instrumentation & control) implications. The STUXNET virus will be generally discussed to demonstrate threats to I&C systems that may be part of nuclear operations. It is highly recommended that Part I of this PEP be taken prior to Part II.

PEP 3-C EH&S Bootcamp for Radiation Safety Professionals, Part 3

Robert Emery and Janet Gutierrez; The University of Texas Health Science Center at Houston

See PEP 1-C

PEP 3-D FRMAC Dose Assessment Methodology as it relates to the Draft EPA PAG Manual, Part 3

Thomas Laiche; Sandia National Laboratories

See PEP 1-D

Continuing Education Lectures

CELs take place in the ***Baton Rouge River Center, Louisiana***

Monday 10 February 7:15-8:15 am

CEL -1 A Novel Reactor Design Using a Beryllium Moderated, Light Water Cooled Natural Uranium Core

Robert Hayes; MIT Physics Department Laboratory for Nuclear Science

A novel nuclear reactor design concept is presented. The reactor design enables initial fueling by natural uranium only. The reactor is a hyper breeder with the ability to be partially fueled by depleted uranium after moderate burn time. The coolant used is light water which is required to be present for initial criticality although the primary moderator is natural beryllium. The burn up characteristics of this hyper breeder is such that plutonium creation rapidly converts the fissile distribution into reactor grade materials making the overall design proliferation resistant (in conjunction with being fueled only by natural and depleted uranium). The presentation will start with a review of basic reactor physics intended as a sufficient overview for a health physicist to digest the rest of the material on core physics and burn up.

Tuesday 11 February 7:15-8:15 am

CEL-2 Nuclear Reactor Radiation Shielding

Edward Waller; University of Ontario Institute of Technology

Radiation shielding is an essential component of nuclear reactor design. For the health physicist, radiation shielding represents the primary engineered barrier for the prevention of external dose. As such, the health physicist and nuclear engineer must work hand-in-hand to ensure the safety of the shielding design. This presentation will briefly review the history of radiation shielding, provide an overview of key concepts related to neutron and gamma radiation shielding calculations and finally discuss applications to a variety of nuclear reactors, including specific examples from Enrico Fermi I, NS Savannah and CANDU designs. The overall goals of radiation shielding will be presented with the intent of providing a general refresher on the importance of radiation shielding to reactor operations. References for this CEL include (but are not limited to) Radiation Shielding, by Shultis & Faw, ANS, 2000 and Reactor Shielding for Nuclear Engineers, N.M. Schaeffer (ed.), AEC TID-25951, 1973 and Engineering Compendium on Radiation Shielding, R. G. Jaeger (Editor), Springer-Verlag, 1968.

Wednesday 12 February 7:15-8:15 am

CEL-3 Interpretation of Radiation Measurements

Ray Johnson; Dade Moeller Training Academy

Misunderstandings abound when it comes to the interpretation of radiation measurements. There are two key factors governing such interpretations: 1) measurements have no meaning until interpreted and 2) measurements only have meaning in terms of how they are interpreted. Thus, recorded or reported radiation measurements have no inherent meaning by themselves, they are just numbers. Interpretation of radiation measurements may have as much to do with attitudes and perceptions of radiation risks as it does about technology. For example, a worker at an industrial facility observed the RSO taking readings with a Geiger counter and saw the meter go off scale. That was enough information for this worker to start an uproar that eventually involved several hundred other workers, the union, and management. Another worker at a food production facility heard a GM meter in use for surveying the installation of a new x-ray machine for product quality control. He raised concerns and when the company manager heard there was radiation in his facility, he told the x-ray company to remove their machine. This resulted in the loss of a $4 million sale for 20 x-ray machines. Radiation safety specialists have the advantage for interpreting radiation measurements based on knowledge of comparative readings from background and other sources. Most people without this specialized knowledge do not know that we live in a sea of radiation which surrounds us all the time. Furthermore, a screaming Geiger counter may sound alarming, but radiation risks depend on many other factors, such as the type of radiation, the proximity of people, and the duration of exposures. A Geiger counter reading is only one piece of information which specialists would use for assessing potential risks.

Health Physics Society Midyear Topical Meeting – Registration Form
9-12 February 2014, Baton Rouge, Louisiana

CHP? ❑ Yes ❑ No
NRRPT? ❑ Yes ❑ No

Name for badge: (Last)_____(First) _____
Affiliation (for badge)(limit to 18 characters and spaces): _____
Address : _____HPS Member #: _____
City:_____ State: _____ Zip/Postal Code: _____
Business Phone:_____FAX:_____Email: _____
If Registering - Companion Name: _____

Preregistration Deadline: 21 January

REGISTRATION FEES: (Mark Appropriate Boxes)	Preregistration	On-Site Fees
❑ HPS Member (Receptions, Exhibitor Lunch)	$430.00	$530.00
❑ Non-Member* (Receptions, Exhibitor Lunch)	$550.00	$650.00
❑ HPS Member (Receptions, Exhibitor Lunch) + 2014 Dues	$595.00	$695.00
❑ Emeritus Member (Receptions, Exhibitor Lunch)	$215.00	$265.00
❑ One Day ONLY ❑Mon ❑Tues ❑Wed	$275.00	$300.00
❑ Student (Receptions, Exhibitor Lunch)	$ 70.00	$ 70.00
❑ One Day ONLY Student ❑Mon ❑Tues ❑Wed	$ 40.00	$ 40.00
❑ Companion (Receptions, Breakfast)	$ 95.00	$ 95.00
❑ Emeritus Companion (Receptions, Breakfast)	$ 48.00	$ 48.00
❑ HPS Member PEP Lecturer (Receptions, Exhibitor Lunch)	$130.00	$230.00
❑ HPS Member CEL Lecturer (Receptions, Exhibitor Lunch)	$280.00	$380.00

*Includes HPS Associate Membership for year 2014 - First Time Members Only

PROFESSIONAL DEVELOPMENT SCHOOL (PDS) immediately following Midyear Meeting:

❑ Radiation Safety in Medicine (12-15 Feb)	$600.00	$700.00

TECHNICAL TOURS:

❑ Laser Interferometer Gravitational-Wave Observatory (Tues 11 Feb, 2:00-4:00 pm)	# of Tickets ____ X $25	# of Tickets ____ X $30 _____
❑ CAMD (Tues 11 Feb, 3:00-5:00 pm)	# of Tickets ____ X $25	# of Tickets ____ X $30 _____

AAHP COURSES (Saturday, 8 February):

❑ Course 1 – Radiation Protection with Alpha Particle Emitters (J Frazier, M Littleton)	$275.00
❑ Course 2 – 8 Hour HAZWOPER Refresher Course (W Gaul)	$275.00

PEP COURSES (Sunday, 9 February) -

8:00–10:00 AM

1-A Fundamentals of Gamma Spectroscopy (D Pan)
1-B Training First Responders on RDDs and Improvised Nuclear Devices (INDs) Events (K Groves)
1-C EH&S Bootcamp 1 (R Emery, J Gutierrez)
1-D FRMAC Dose Assessment Methodology as It Relates to the Draft EPA PAG Manual, Part I (T Laiche)
1-E Training for ISO17025 Assessments (T Voss)

10:30 AM–12:30 PM

2-A Fundamentals of Alpha Spectroscopy (D Pan)
2-B Introduction to Nuclear Security I (E Waller)
2-C EH&S Bootcamp 2 (R Emery, J Gutierrez)
2-D FRMAC Dose Assessment Methodology as It Relates to the Draft EPA PAG Manual, Part II (T Laiche)
2-E Integration of Health Physics into the Medical Management of Radiation Incident Victims (S Sugarman)

2:00–4:00 PM

3-A Exploring Low Level Counting Statistics (T Voss)
3-B Introduction to Nuclear Security II (E Waller)
3-C EH&S Bootcamp 3 (R Emery, J Gutierrez)
3-D FRMAC Dose Assessment Methodology as It Relates to the Draft EPA PAG Manual, Part III (T Laiche)

8:00-10:00 AM
___/___ = $90.00
1st 2nd
❑Yes, stand by

10:30 AM-12:30 PM
___/___ = $90.00
1st 2nd
❑Yes, stand by

2:00-4:00 PM
___/___ = $90.00
1st 2nd
❑Yes, stand by

Federal TAX ID
#04-6050367

PAYMENT INFORMATION–Purchase Orders NOT Accepted for AAHP/PEP or Technical Tour Registration
If paying by check, make payable and mail to: Health Physics Society, 1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101
❑ VISA ❑ MasterCard ❑American Express
Card Number: _____ CV2#: _____Exp. Date: _____
Cardholder Name: _____
Signature: _____
Cardholder Address: _____
Cardholder email: _____ Cardholder Phone: _____

If you are sending this by FAX, (703) 790-2672
PLEASE do not mail the original

Registration Section Total	$_____
PDS Total	$_____
Technical Tour Total	$_____
AAHP & PEP Section Total	$_____
TOTAL FEES	**$**_____