

PRELIMINARY PROGRAM



***56th Annual Meeting of the
Health Physics Society
(American Conference of Radiological Safety)***



26 - 30 June 2011

Palm Beach County Convention Center

West Palm Beach, Florida

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(American Conference of Radiological Safety)***



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Key Dates

Current Events/Works-In-Progress Deadline	27 May
HPS Annual Meeting Preregistration Deadline	31 May
PEP Preregistration Deadline	31 May
Hotel Registration Deadline	3 June
AAHP Courses	25 June
Professional Enrichment Program	26 - 30 June
HPS 56th Annual Meeting	26 - 30 June
American Board of Health Physics Written Exam	27 June

Registration Hours and Location

Registration at the Palm Beach County Convention Center - Exhibit Hall A Foyer

Saturday, 25 June	2:00 - 5:00 pm
Sunday, 26 June	10:00 am - 5:00 pm
Monday, 27 June	8:00 am - 4:00 pm
Tuesday, 28 June	8:00 am - 4:00 pm
Wednesday, 29 June	8:00 am - 4:00 pm
Thursday, 30 June	8:00 - 11:00 am

Saturday

Saturday AAHP Courses will take place in the
Palm Beach Convention Center

Sunday - Thursday

All PEPs, CELs and Sessions will be at the
Palm Beach Convention Center

HPS Secretariat

1313 Dolley Madison Blvd.

Suite 402

McLean, VA22101

(703) 790-1745; FAX: (703) 790-2672

Email: hps@burkinc.com; Website: www.hps.org

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CURRENT EVENTS/WORKS-IN-PROGRESS

The submission form for the Current Events/Works-in-Progress poster session is on the Health Physics Society Website at www.hps.org under the Palm Beach Annual Meeting section. The deadline for submissions is Friday 27 May 2011. All presentations will take place as posters on Monday, 27 June between 1:00-3:00 pm. Individuals will be notified of acceptance of their WIP submissions by early June.

For questions regarding WIP submissions, contact Erin Johnson or Sue Burk at the HPS Secretariat at 703-790-1745 or ejohnson@burkinc.com/sburk@burkinc.com.

NOTE FOR CHPs

The American Academy of Health Physics has approved the following meeting-related activities for Continuing Education Credits for CHPs:

- Meeting attendance is granted 2 CECs per half day of attendance, up to 12 CECs;
- AAHP 8-hour courses are granted 16 CECs each;
- HPS 2-hour PEP courses are granted 4 CECs each;
- HPS 1-hour CELs are granted 2 CECs each.

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Robert Cherry, Jr., Secretary
Barbara L. Hamrick, Secretary Elect
John P. Hageman, Treasurer
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Bryan Lemieux
Tony Mason
Timothy D. Taulbee
Latha Vasudevan

2011 Exhibitors

(as of 1 April 2011)

Ameriphysics
Arrow Tech
Best Medical
Bionomics
Bladewerx
Canberra
Chase Environmental
Dade Moeller
Eckert & Ziegler
F&J Specialty Products
Flir
Gel Labs
Health Physics Instruments
Hi-Q
Hopewell Designs
JL Shepherd
Lab Impex
Lab Logic
Landauer
Ludlum
Mirion
MJW
New Green
Ortec
Philotechnics
Radiation Safety Associates
Radiation Solutions
RSCS
RSO
Saint Gobain Crystals
Saphymo
SE International
Spectrum Techniques
Supertech, Inc.
Teletrix
Thermo Fisher
University of Chicago Argonne
US Navy Recruiting

Meeting Sponsor

Chesapeake Nuclear Services

Health Physics Society Committee Meetings

Palm Beach Convention Center

Saturday, 25 June 2011

FINANCE COMMITTEE

8:00 am-Noon

ABHP BOARD MEETING

8:30 am-5:00 pm

HPS EXECUTIVE COMMITTEE

1:00-4:00 pm

Sunday, 26 June 2011

HPS BOARD OF DIRECTORS

8:00 am-5:00 pm

AAHP EXECUTIVE COMMITTEE MEETING

8:30 am-5:00 pm

PROGRAM COMMITTEE

11:00 am-1:00 pm

ACCELERATOR SECTION BOARD MEETING

4:15-5:45 pm

Monday, 27 June 2011

PUBLIC INFORMATION COMMITTEE

Noon-2:00 pm

AD HOC STUDENT SUPPORT

1:30-2:30 pm

NOMINATING COMMITTEE

2:00-3:00 pm

HISTORY COMMITTEE

Noon-2:00 pm

CHAPTER COUNCIL MEETING

1:00-2:00 pm

Tuesday, 28 June 2011

COMMITTEE CHAIR BREAKFAST

7:30-8:30 am

HP PROGRAM DIRECTORS ORGANIZATION

Noon-1:00 pm

CSU RECEPTION - ALL ARE WELCOME

5:30-7:00 pm

Wednesday, 29 June 2011

STUDENT BRANCH MEETING

Noon-1:00 pm

GOVERNMENT RELATIONS MEETING

Noon-2:00 pm

SCIENCE SUPPORT COMMITTEE

Noon-2:00 pm

SOCIETY SUPPORT COMMITTEE

Noon-2:00 pm

MEMBERSHIP COMMITTEE

12:30-2:30 pm

CONTINUING EDUCATION COMMITTEE

1:00-3:00 pm

STANDARDS MEETING

1:00-4:00 pm

ANSI 42.54 COMMITTEE MEETING

1:00-5:00 pm

AAHP NOMINATING COMMITTEE

2:00-3:00 pm

ACADEMIC EDUCATION COMMITTEE

2:00-4:00 pm

HOMELAND SECURITY COMMITTEE

4:30-6:00 pm

HPS ANNUAL BUSINESS MEETING

5:00-6:00 pm

Thursday, 30 June 2011

PROFESSIONAL DEVELOPMENT SCHOOL COMMITTEE

8:00-9:00 am

HPS BOARD OF DIRECTORS MEETING

11:00 am-5:00 pm

PROGRAM COMMITTEE

12:30-3:00 pm

New Addition to the Program!

Tuesday, 10:00-11:30 am

Convention Center, Room 1F

Workshop: Publishing in Health Physics and Operational Radiation Safety

Speakers: Mike Ryan, Deanna Baker, Craig Little, MaryGene Ryan

A workshop geared towards first-time authors who are interested in publishing but are uncertain of the process. There will be a tutorial as well as presentations from both Editors-in-Chief. This workshop will answer many questions regarding the flow of a manuscript from submission to publication. This is also a good refresher for authors who have already published with HPJ or ORS but would like to have a better understanding of the process.

Important Events

Welcome Reception

Please plan on stopping in at the Palm Beach Convention Center, in the Grand Ballroom Foyer, Sunday, 26 June, from 6:00-7:00 pm. There will be an opportunity to meet friends to start your evening in Palm Beach. Cash bar and light snacks will be available.

Exhibits

Free Lunch! Free Lunch! – Noon, Monday, 27 June. All registered attendees are invited to attend a complimentary lunch in the exhibit hall.

Breaks Monday Afternoon-Wednesday Morning – Featuring morning continental breakfasts and afternoon refreshments such as fruit, ice cream and cookies. Be sure to stop by and visit with the exhibitors while enjoying your refreshments!

Sessions and Course Locations

AAHP Courses on Saturday, PEPs, CELs and all sessions Sunday through Thursday will take place at the Palm Beach Convention Center.

AAHP Awards Luncheon

Palm Beach Convention Center
Tuesday 28 June
Noon-2:15 pm

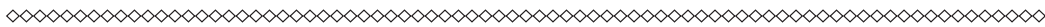
HPS Awards Banquet

An enjoyable evening spent with members of the Health Physics Society. This event will be held on Tuesday, 28 June, and is an excellent opportunity to show your support for the award recipients as well as the Society. The awards will be presented after the dinner and the event will last from 7:00-10:00 pm. Included in Registration.

Different this YEAR!

PEP Courses will have presentations posted online for those who have signed up for them prior to the meeting. There will be no hard copy handouts.

See page 32 for Course information



Things to Remember!

All Speakers are required to check in at the Speaker Ready Room at least one session prior to their assigned session.

All posters up Monday–Wednesday in Exhibit Hall

Poster Session featured Monday, 1:00-3:00 pm – No other sessions at that time

PEP Refund Policy – See page 33

Registration Policy: Unless payment accompanies your form, you will NOT be considered preregistered.

Sign up early for Social Events!

If Social Events are not full by the deadline of 31 May, there is a chance that they will be cancelled.

Don't get to the meeting and find that the Social Event you kept meaning to sign up for is now cancelled due to undersubscription.

Meeting Refund Policy: Request for refunds will be honored if received in writing by 31 May. All refunds will be issued AFTER the meeting and will be subject to a \$50.00 processing fee. **NO REFUNDS WILL BE ISSUED AT THE MEETING.** Refunds will not be issued to no-shows.

56TH Annual Meeting, Palm Beach, Florida

26 - 30 June 2011

WELCOME

Discover The Palm Beaches, a distinctive destination with world-class resorts, unparalleled culinary delights, trendy boutique shopping, and a nightlife that thrives all year around. With 38 unique cities and towns, 47 miles of pristine beaches, 160 golf courses, and a host of exciting attractions and cultural venues, The Palm Beaches are the place where Society members and guests will discover that genuine hospitality is a way of life and breathtaking beauty occurs naturally.



Established in 1894, The Palm Beaches have perfected the art of hospitality. In addition to an excellent technical program, Society members and guests will enjoy everything from gracious service and luxurious accommodation to celeb chef restaurants and world-class cultural attractions. Experience total relaxation at the West Palm Beach Marriott—the headquarters hotel—or one of the attractive overflow hotels or even try one of the areas time-honored resorts. Explore local history at the Flagler Museum, learn about Palm Beach’s past on a walking tour of Worth Avenue, and appreciate the splendid architecture named after one of the area’s first developers along Mizner Park.



Over the past several years, The Palm Beaches have seen major investments and new developments that influence the quality of life of its residents and the destination experience of its visitors. Officially opened last February, West Palm Beach’s massive waterfront restoration project brought more than \$30 million worth of renovations and new facilities to the city’s downtown harbor district. Right across the bridge, Palm Beach’s Worth Avenue, lovingly labeled the “Rodeo Drive of the East,” is currently receiving the final touches of a \$15 million renovation scheduled for completion just in time for the 2011 Health Physics Society Annual Meeting.

The 56th Annual HPS Meeting promises to be rich in technical information, professional development, continuing education, and unparalleled in networking opportunities. So begin planning to set aside a little extra time before and/or after the annual meeting and tell the family that this summer’s vacation is in Florida!

TO/FROM AIRPORT

Several of the HPS hotels have a complimentary shuttle to/from Palm Beach International airport as noted in their information below. There is a phone bank in the baggage claim area so that you can call your hotel for pickup. All of the hotels other than the Hyatt also offer complimentary on-site parking.

WEATHER

Palm Beach County, including the rest of southern Florida, has a true tropical climate with average high temperatures in late June of 86 to 90°F and lows of 70 to 75°F. During the summer months, short afternoon thunderstorms and seabreezes can cool down the rest of the day.

ACCOMMODATIONS

The Headquarters hotel will be the Marriott West Palm Beach located 2 blocks from the Palm Beach Convention Center where the ABHP Courses, the PEP Courses, the Welcome Reception and the Awards Banquet, as well as the meeting itself will be held. The overflow hotel that is also within walking distance is the Hyatt Place located in City Place, about 3 blocks from the Convention Center. Additional hotels for overflow are the Marriott Courtyard, the Crowne Plaza Hotel and Suites, and the Hilton Palm Beach Airport, all of which will be served by a free shuttle to get you back and forth to the Convention Center. The shuttle will also stop at the Marriott headquarters hotel and the Hyatt for those who would prefer that

mode of transportation. Rates, registration links for each hotel and hotel websites are shown below. All hotels are smoke free. Cutoff date for hotel registration in order to receive the HPS rate is Friday, June 3rd or if the room block should be sold out before that time.

Headquarters Hotel: West Palm Beach Marriott, 1001 Okeechobee Boulevard

HPS Rate: \$110 per night single/double/triple/quad

- complimentary shuttle to/from the airport, complimentary on site parking, outdoor pool, fitness center
- for reservations call 800-376-2292 and mention the Health Physics Society meeting or go to <http://www.marriott.com/hotels/travel/pbimc-west-palm-beach-marriott/?toDate=7/1/11&groupCode=HPSHPSA&fromDate=6/23/11&app=resvlink>
- hotel website <http://www.marriott.com/hotels/travel/pbimc-west-palm-beach-marriott/>

Overflow hotels in alphabetical order:

Courtyard Marriott West Palm Beach, 600 Northpoint Parkway

HPS Rate: \$89 per night single/double

- complimentary high speed internet in your room, outdoor pool, fitness center, no complimentary shuttle from the airport (approximately \$20 taxi fare one way), complimentary on site parking
- for reservations call 800-228-9290 and mention the Health Physics Society meeting or go to King bed: <http://www.marriott.com/hotels/travel/PBICH?groupCode=HPSHPSA&app=resvlink&fromDate=6/24/11&toDate=7/1/11>
- Queen-Queen beds: <http://www.marriott.com/hotels/travel/PBICH?groupCode=HPSHPSB&app=resvlink&fromDate=6/24/11&toDate=7/1/11>
- hotel website <http://www.marriott.com/hotels/travel/pbich-courtyard-west-palm-beach/>

Crowne Plaza West Palm Beach, 1601 Belvedere Road

HPS Rate: \$109 NOTE: some rooms are 2 room suites and some are regular hotel rooms; all are at the same cost per night

- complimentary full breakfast buffet, complimentary wi-fi in your room, complimentary shuttle to/from the airport, complimentary on site self parking, outdoor pool, fitness center, whirlpool and sauna
- for reservations go to <http://www.ihg.com/h/d/CP/1/en/rates?hotelCode=PBIIA&rateCode=HPS&IATAno=99502056>
- hotel website <http://www.cpwestpalmbeach.com/>

Hilton Palm Beach Airport, 150 Australian Avenue

HPS Rate: \$109 single/double

- complimentary continental breakfast, complimentary shuttle to/from the airport, complimentary wireless in your room, complimentary on site self parking, outdoor pool, complimentary City Place transportation, fitness center
- for reservations go to <http://www.hilton.com/en/hi/groups/personalized/PBIAHHF-HP-SO-20110624/index.jhtml>
- hotel website http://www1.hilton.com/en_US/hi/hotel/PBIAHHF-Hilton-Palm-Beach-Airport-Florida/index.do

Hyatt Place West Palm Beach/Downtown, 295 Lakeview Avenue

HPS Rate: \$119 single/double

- complimentary continental breakfast, complimentary wi-fi in your room, spa/Jacuzzi, no complimentary shuttle from the airport, parking \$15 per day in secure on-site garage
- for reservations go to <http://www.hyatt.com/hyatt/reservations/flow6/place/propCheckAvailability.jsp?pid=PBIZW&extCorporatId=G-HPS1>
- hotel website <http://www.westpalmbeach.place.hyatt.com/hyatt/hotels/place/index.jsp>

Tours...Events...Tours...Events...Tours...Events...Tours...Events **SOCIAL EVENTS**

Sunday, 26 June 2011

Welcome Reception, Palm Beach Convention Center Ballroom Foyer

6:00 - 7:00 pm

Cost: Included in Registration

Come to the opening event of the meeting and enjoy snacks and a cash bar while reconnecting with friends and associates.

Monday, 27 June

Open Mic Night, Location TBD

8:00 pm

Cost: Free

Enjoy an evening of entertainment by talented HPSers. This popular event is sponsored by exhibitors and has proven to be an event to look forward to each year. Watch for details online as this event evolves.

Tuesday, 28 June

5K Run/Walk, On the beach in the sand!

6:30 am

Preregistration: \$15/Onsite: \$20

For those who want a morning of activity, here is your chance to shine. Buses will leave from the Marriott at 6:30 am; price includes a T-shirt.



HPS Annual Awards Banquet, Palm Beach Convention Center

7-10 pm

Fee Included in registration

Attend this annual event where the HPS honors those who have made an outstanding contribution to the field of health physics.

Wednesday, 29 June

Night Out Dinner, Old Key Lime House Restaurant

6:00 pm

Preregistration: \$65/Onsite: \$70



Join with the group for a fun-filled evening at Old Key Lime House historic restaurant which offers tall, cool beverages, fine food, a cheerful friendly staff and a casual tropical setting with a panoramic view of the Intracoastal Waterway. Old Key Lime House is listed yearly in Florida Trend "Top Restaurants" and they are Zagat Rated. Transportation and dinner included. Limited to 75 participants on a first come/first served basis.

Pub Crawl, Establishments in CityPlace

6:30 - 11:30 pm

Preregistration: \$15/Onsite: \$20

Join in this annual fun-filled event. This walking pub crawl will be visiting an assortment of bars and restaurants in CityPlace. The "go at your own pace" or follow along walk will always be within 2-3 large city blocks of the West Palm Beach Marriott. A map will be provided and the crawl will include various giveaways along with food and drink specials.

Tours...Events...Tours...Events...Tours...Events...Tours...Events

ACTIVITIES

There is much to do in Palm Beach -- from arts and culture to kayaking, shopping to nightlife to entertainment and more.

The early bird gets the worm, right? You could start each day around 7:00 AM with Continuing Education Lectures or you could start with a walk on the beach, only 2 miles from the Headquarters Hotel, and catch a spectacular sunrise at 6:30 AM and still be on time for your CEL. There are 47 miles of pristine beaches in Palm Beach County and the Gulf Stream is so close that it keeps the waters clear year-round. So clear in fact that scuba diving is a very popular sport with several dive shops and charters within just a short distance. There are almost 3 dozen natural and artificial reefs and wrecks available.



Snorkeling is popular at nearby Peanut Island. Maybe if the ocean isn't your scene, then perhaps a boat ride on the Safari Queen at scenic Lion Country Safari is more to your liking. Rent a cabin there and fall asleep to the sounds of nighttime Africa. Oh, you're more into sports? Did you know that the Roger Dean Stadium in Jupiter, FL is the only stadium in the country to host four teams: two Spring Training (Florida Marlins and St. Louis Cardinals) and two Minor League (Jupiter Hammerheads and Palm Beach Cardinals – Class A). Come watch these teams in action. With over 160 courses countywide, Palm Beach County is Florida's golf capital.

With 1,100 public and private tennis courts you might think Palm Beach is the tennis capital; maybe it's not, but it is home to tennis greats like Andy Roddick, Chris Evert, and sisters Venus and Serena Williams. Pack your favorite racquet or rent one and get your game on. So you ask "What does this have to do with health physics?" The answer is simply one word, "networking." Would you rather meet with your colleagues and discuss the latest radiation protection news in the lobby of the hotel? There is nothing wrong with that - the accommodations are all great choices. But joining your peers for something a little more unique in Palm Beach is something to definitely consider.

Shopping: This is what Wikipedia has to say about Palm Beach Shopping: "Worth Avenue, sometimes referred to as the Rodeo Drive of Florida, is a famous upscale shopping district in Palm Beach, Florida, in the United States. The street stretches four blocks from Lake Worth to the Atlantic Ocean. The street first became fashionable after the construction in 1918 of the Everglades Club. Worth Avenue also includes smaller alleyways known as Vias off the main avenue. The epitome of Palm Beach style, the street has approximately 250 shops, boutiques, restaurants and art galleries, including Giorgio Armani, Neiman Marcus, Cartier, Louis Vuitton, Tiffany & Co., etc.; you get the drift. An open-air mall, 150 Worth (formerly, The Esplanade), lies at the eastern end of Worth Avenue. 150 Worth offers a variety of upscale shops anchored by department store Saks Fifth Avenue." There are also fun consignment shops to explore in Palm Beach where the rich and famous recycle their clothes after only "gently using" them. After all, when you are rich and famous, you can't be seen in the same outfit more than once!



So you see there is more to do in Palm Beach than you might have thought and we haven't even mentioned the nightlife or the Pub Crawl. This year's meeting venue is incredible and you will have a very productive and memorable time if you put it on your calendar and make a decision to attend.

View these websites for up to the minute “to do” information in the area:

Marriott website with great listing of local attractions:

<http://www.marriott.com/hotels/local-things-to-do/pbimc-west-palm-beach-marriott/>

Palm Beach County Convention and Visitor’s Bureau:

<http://www.palmbeachfl.com/>

CityPlace, only 0.2 miles from the Marriott (only 2 large city blocks), or across the street from the Convention Center, has a multitude of shops, restaurants and places to sit and people watch:

www.cityplace.com

HOSPITALITY SUITE

Registered spouses and companions will again enjoy the benefit of a Hospitality Suite at the Palm Beach Convention Center. The suite will be located in Room 11 on the first floor of the convention center around the corner from the registration desk. The Hospitality Suite will be open from Sunday through Wednesday from 7:30 am until 11 am.

Local HPS members and friends will be available with planning local day trips, or selecting restaurants, shopping, beaches, and attractions in the West Palm Beach area. A continental breakfast will be available Monday through Wednesday mornings for registered companions.

56th Annual Meeting of the Health Physics Society

Palm Beach, FL, 26 - 30 June, Preliminary Scientific Program

Presenter's name is asterisked (*) if other than first author.

MONDAY

7:00-8:00 AM

Ballroom A

CEL1 Nanoparticle-Based Radiation Detectors and the Use of Radiation for Nanoparticle Detection

M.L. Marceau-Day, L. Madsen

Center for Advanced Microstructures and Devices, Audubon Sugar Institute, Louisiana State University, Baton Rouge

7:00-8:00 AM

Ballroom B

CEL2 Integration of Radiation Safety into Environmental Health and Safety: The Columbia Experience

Thomas L. Morgan, Kathleen Crowley

Environmental Health and Safety, Columbia University

7:00-8:00 AM

Ballroom C

CEL3 Laser Safety Program Development at an Academic Medical Center

Deirdre Elder

University of Colorado Hospital

8:30 AM - NOON

Grand Ballroom

MAM-A: Plenary - Creating a Radiation Safety Culture in the Workplace

Chair: Edward F. Maher

8:30 AM

Opening Remarks

Edward Maher; President, HPS

8:40 AM

PL.1

Moving Forward on Safety Culture

Weber, M.

US Nuclear Regulatory Commission

9:15 AM

PL.2

IRPA's Initiative on Radiation Protection Culture

Le Guen, B. (Landauer Lecture)

International Radiation Protection Association

9:50 AM

PL.3

Fostering a Radiation Safety Culture in Nuclear Power

Andersen, R.

Nuclear Power Institute

10:20 AM

BREAK

10:45 AM

PL.4

Radiation Safety Culture Challenges in the Medical Professions

Applegate, K. (Dade Moeller Lecture)

Image Lightly Alliance, Emory University School of Medicine

11:20 AM

PL.5

Safety Culture: Agreement States' Perspective
Cox, L.

Organization of Agreement States

Noon-1:00 PM

Exhibit Hall A

Complimentary Lunch in Exhibit Hall for all Registrants and Opening of Exhibits

1:00 - 3:00 PM

Exhibit Hall A

P: Poster Session

Accelerator

P.1 Dose Profile Studies for Protection of Undulators in Linac Coherent Light Source

Mao, S.X., Nuhn, H., Field, R. C., Tran, H., Liu, J.C.

SLAC National Accelerator Laboratory, LAC National Accelerator Laboratory

P.2 Estimating the Secondary Particle Source Radius, and Coalescence Radius, in Heavy Ion Collisions

PourArsalan, M., Townsend, M.L., Heilbronn, L.H.,

Bahta, S., Delauder, N.P.

University of Tennessee

Bioeffects/Radiation Biology

P.3 Analysis of Genomic Transmission in Families of Mayak Nuclear Workers Using a Minisatellite CEB1

Glazkova, I.V., Rusinova, G.G.

Southern Urals Biophysics Institute (SUBI)

P.4 Assessment of Systemic and Bronchopulmonary Immune Resistance in Nuclear Industry Workers at Prolonged Combined Exposure

Pavlova, O.

Southern Urals Biophysics Institute

P.5 Assessment of Molecular Damage in TP53 in Normal and Transformed Lung Tissues of Nuclear Workers at the Mayak Production Association

Vyazovskaya, N.S., Guryanov, M.Y., Belosokhov, M.V.,

Kartashova, M.V., Kiseleva, O.I., Azizova, T.V.

Southern Urals Biophysics Institute (SUBI)

P.6 Comparison of ¹³⁷Cs Irradiators and X-ray Irradiators for Research Use

*Rossmann, J.A., Fernandes, J.A. *, Demirci, G.*

BIDMC/UMass Lowell, BIDMC

Contemporary Topics in Health Physics

P.7 Efficacy of Personal Air Samplers (PAS) for the Timely Assessment of Occupational Exposures to Long Lived Alpha Emitters in the Presence of Radon Progeny

Skrable, K., French, C., Tries, M., Darois, E., Tarzia, J., Straccia, F.

University of Massachusetts Lowell, Radiation Safety and Control Services

P.8 The Association of the Symptom Forgetfulness to Cellular Phone Users: Health Perspective

Kumar, N., Khan, R., Sharma, V.

Babasaheb Bhimrao Ambedkar University (Central University), India, Indian Institute of Toxicology Research, India

P.9 Occupational Radiation Exposure in Korea

Choi, W., Lee, S., Lee, S., Seo, G., Choi, M., Lim, G., Lee, J., Kim, K.

Korea Institute of Nuclear Safety, Kyung Hee University

P.10 Development of a Health Physics Laboratory for Research and Education at the Center for Advanced Energy Studies

*Harris, J., Jensen, J.**

Idaho State University

Emergency Planning/Response

P.11 Health Effects Following a Radiological Emergency in First Responders

Heard, J., Shaw, E., Tenner, A., Tsorxe, I., Agordzo, H., Carradine, M.

Alcorn State University

P.12 Improving the Emergency Response Ability by Using Web GIS and Google Earth

Fang, H., Lu, C., Chang, B., Yang, Y.

Institute of Nuclear Energy Research, Taiwan

Environmental

P.13 Radionuclides in Crayfish from the Rio Grande Upstream and Downstream of Los Alamos National Laboratory

Fresquez, P.R., Eisele, W.F.

Los Alamos National Laboratory

P.14 Ecological Assessment of Reservoirs used as Liquid Radioactive Waste Storages of Mayakö Production Association

Andreev, S.S., Tryapitsyna, G.A., Deryabina, L.V., Dukhovnaya, N.I., Osipov, D.I., Styazhkina, E.V., Obvintseva, N.A., Stukalov, P.M., Pryakhin, E.A.

Urals Research Center for Radiation Medicine, Chelyabinsk

P.15 Qualitative Assessment of Sources of Strontium-90 Seepage into the Techa River

Melnikov, V.S., Kostyuchenko, V.A.

Urals Research Center for Radiation Medicine (UR-CRM)

P.16 Quantification of Anthropogenic Radionuclides in a Naturally-Shed Reindeer Antler found in Arctic Sweden

Houser, E., Bytwerk, D., Higley, K.

Oregon State University

P.17 Measurement and Verification of Indoor Radon Concentration In Taiwan

Lin, C.F., Wang, J.J., Lee, H.W., Fang, H.F.*

Institute of Nuclear Energy Research, Atomic Energy Council

P.18 Radon Risk Maps in Western Iberia: Geological Constraints

*Pereira, A.S., Neves, L.F.**

IMAR, Department of Earth Sciences, University of Coimbra, Portugal

P.19 Uncertainty Analysis for Surface Water Sampling to Measure the Tritium Concentration at the Savannah River Site

Atkinson, R.

Colorado State University

P.20 The Concentration Ratio of ³⁶Cl in Artemia Salina

*Tissot, C., Paine, J., Shaw, C., Bytwerk, D., Higley, K., Whitlow, J.**

Oregon State University

P.21 Radioactivity Studies in Oil Samples Collected from Various Locations in Louisiana, Mississippi, and Alabama Coasts

Billa, J., Cooper, C., Aceil, S., Adzanu, S.*

Alcorn State University

P.22 Measurement of Radionuclide Concentration in Commonly Used Fertilizers in the Delta Region of Mississippi State

Osei, G., Williams, T., Gidi, M., Singelton, K., Franklin, C., Wilson, J., Walton, J.

Alcorn State University

P.23 National Center for Radioecology (NCoRE) at Savannah River National Laboratory: A Network of Excellence for Environmental Radiation Risk Reduction and Remediation

Kuhne, W., Jannik, G., Farfan, E., Mayer, J.

Savannah River National Laboratory

External Dosimetry

P.24 Patient Dose Estimation in Megavoltage Computed Tomography Imaging on Prostate Cancer Patients

Lee, K.-W., Wu, J.-K., Wu, J., Yang, Y.-M., Chang, S.-J., Cheng, J.C.-H.

Institute of Nuclear Energy Research, National Taiwan University Hospital

P.25 Effect of Inefficient Showering on Radiation Doses to Skin from Dermal Contamination

*Apostoaiei, A.I., Kocher, D.C.**

SENES Oak Ridge, Inc.

Instrumentation

P.26 Installation of a 6800 Curie Cobalt-60 Source into the Gamma Beam Irradiator

Holman-Abbott, M.

SRNS

Internal

P.27 Results of Monitoring for Am-241 Body Burden in Nuclear Workers at the Mayak PA

Efimov, A., Khokhryakov, V.

Southern Urals Biophysics Institute

P.28 Internal Exposure by I-123 and Zn-65 in a Radiopharmaceutical Production Plant

Dantas, B., Dantas, A., Lucena, E., Araujo, F., Vidal, M., Audino, W., Bertelli, L.

IRD-CNEN, IMEN, LANL

P.29 Monte Carlo Simulation of In vivo Measurement of the Most Suitable Position of the Knee for the Most Accurate Measurement of the Activity

Khalaf, M., Brey, R., James, A.

Idaho State University, Washington State University

P.30 In-Vivo Measurement of Lung Activity - a Monte Carlo Simulation

Acha, R., Brey, R., James, A., Capello, K.

Idaho State University, USTUR, HML

P.31 Validation of Proposed Revisions to ICRP Human Respiratory Tract Model Using Bioassay Data Associated with an Acute Inhalation of Refractory PuO₂

Avtandilashvili, M., Brey, R., James, A.

Idaho State University, Washington State University

P.32 Modeling Am-241 Distribution in Bones of the USTUR Case 0102 Human Leg Phantom

Tabatadze, G., Brey, R., James, A.

Idaho State University, Washington State University

Medical Health Physics

P.33 Patient Radiation Dose from Radiographic Examinations in Korea

*Kim, G., Lee, J., Kim, H., Sung, D., Kim, Y., Lee, K., Kim, K.**

Kyung Hee University, National Institute of Food and Drug Safety Evaluation, Kyung Hee University Medical Center, Chonnam National University Hospital, Dong-A University Medical Center

P.34 Prediction of Caregiver or Family Dose Due to the Discharged ¹³¹I Administrated Patient from the Hospital

Jeong, K., Jung, J., Lee, H., Lee, J.

Korea Institute of Nuclear Safety, East Carolina University, Eulji Medical Center, Hanyang University

P.35 Assessment of Radioactivity Excretion during F-18- fluorodeoxyglucose PET/CT

Yang, S., Jang, D., Lee, S., Choi, H., Son, J., Yoon, C.

Asia Cancer Center(DIRAMS)

P.36 Determination of Dose and Fragmentation in a Water Phantom for Ions Relevant to Hadrontherapy using PHITS Transportation Code

Butkus, M.

Texas A&M

Operational Health Physics

P.37 Effectiveness of Safety Glasses in Protecting from Beta-Radiation Exposure

Beloousova, O., Gonzalez, D.

Los Alamos National Laboratory

P.38 Making Sense of Negative Counting Results in a Population

Strom, D., Joyce, K., MacLellan, J., Watson, D., Lynch, T., Antonio, C., Birchall, A., Anderson, K., Zharov, P.

Pacific Northwest National Laboratory, UK Health Protection Agency, Mayak Production Association

International

P.39 Noise Reduction in Brain CT Employing Wavelet Filters

Pita-Machado, R., Perez-Diaz, M., Bravo-Pino, R., Lorenzo-Ginori, J.V.

Center of Clinical Engineering and Electromedicine, Cuba, Central University of Las Villas, Cuba

P.40 Comparison of Soil-To-Plant Transfer Factors of Naturally Existing Elements for Rice and Wheat

Uchida, S., Tagami, K.

National Institute of Radiological Sciences, Japan

P.41 ⁴⁰K Sources to Determine the Total Amount of K by Measuring the 1.46 MeV Photon

Escareño-Juarez, E., Vega-Carrillo, H.R.

Unidad Académica de Estudios Nucleares, Universidad Autónoma de Zacatecas, Mexico

P.42 Neutron Absorbed Dose in a CMOS
Borja-Hernández, C.G., Guzmán-García, K.A., Valero-Luna, C., Paredes-Gutiérrez, L.; Hernández-Dávila, V.M., Vega-Carrillo, H.R.*
Unidad Académica de Estudios Nucleares, Universidad Autónoma de Zacatecas, Mexico

P.43 Fixation of Radioiodine and Stable Iodine in Soil
Tsukada, H., Takeda, A., Nakao, A., Hisamatsu, S.
Institute for Environmental Sciences, Japan

P.44 Estimation of JPEG 2000 Compression Bounds for Leukocytes Images Employing Objective Quality Measures, Segmentation Algorithms and Subjective Experiments
Paz-Viera, J.E., Falcón-Ruiz, A., Taboada-Crispi, A., Sahli, H.
Universidad Central Marta Abreu de Las Villas, Cuba, Vrije Universiteit Brussel, Belgium

P.45 Smart Thorium and Uranium Determination Exploiting Renewable Solid Phase Extraction Applied to Environmental Samples in a Wide Concentration Range
Avivar, J., Ferrer, L., Casas, M., Cerdó, V.
University of the Balearic Islands, Spain

P.46 Response of a Passive Neutron Monitor Area
Valero-Luna, C., Guzmán-García, K.A., Borja-Hernández, C.G., Hernández-Dávila, V.M., Vega-Carrillo, H.R.
Unidad Académica de Estudios Nucleares, Universidad Autónoma de Zacatecas, Mexico

P.47 Radionuclide Dose Factors in Voxel Geometries for ¹³¹I, ⁹⁰Y, ¹⁷⁷Lu, ¹⁵³Sm, ¹⁸⁶Re and ¹⁸⁸Re Evaluated with Geant4 Monte Carlo
Amato, E., Minutoli, F., Campenni, A., Baldari, S.
University of Messina, Italy

P.48 The Didactic Value of Monte Carlo Simulation in Health Physics
Amato, E., Minutoli, F., Lizio, D., Baldari, S.
University of Messina, Italy, Institute of Radiological Protection, Research Center of Saluggia, Italy

P.49 Neutron Spectra and H*(10) of Photoneutrons Inside the Vault Room of an 18 MV Linac
Bañuelos-Frías, A.; Borja-Hernández, C.G., Guzmán-García, K.A., Valero-Luna, C., Hernández-Dávila, V.M., Vega-Carrillo, H.R.
Unidad Académica de Estudios Nucleares, Universidad Autónoma de Zacatecas, Mexico

P.50 Behavior of ¹⁴C-Organic Materials in Japanese Paddy Fields
Ishii, N., Tagami, K., Ogiyama, S., Sakurai, S., Uchida, S.
National Institute of Radiological Sciences (NIRS), Japan

P.51 Studying the Compton Scattering by Means of a Gamma Camera: A Didactic Experiment
Amato, E., Cardile, D., Cucinotta, M., Gangemi, V., Nania, R., Quartuccio, N., Sindoni, A., Vigneri, C., Baldari, S.
University of Messina, Italy

P.52 Passive Neutron Monitor Area with TLDs Pairs
Guzmán-García, K.A., Borja-Hernández, C.G., Valero-Luna, C., Hernández-Dávila, V.M., Vega-Carrillo, H.R.
Unidad Académica de Estudios Nucleares, Universidad Autónoma de Zacatecas, Mexico

P.53 Reduction of Radioactivity Concentrations in Edible Wild Plants by Food Processing -Field Observation Results on Iodine-131, Cesium-134 and Cesium-137 Released by Fukushima Daiichi Nuclear Power Plant Accident-
Tagami, K., Uchida, S., Ishii, N.
National Institute of Radiological Sciences, Japan

3:00 - 3:30 PM **Ballroom A**

MPM-A1: Internal I

Co-Chairs: Jay MacLellan, Gary Kramer

3:00 PM **MPM-A1.1**
Distribution of Terminal Lung and Liver Dose Rates in United States Transuranium and Uranium Registries Registrants
McCord, S.L., James, A.C., Tolmachev, S.Y.
United States Transuranium and Uranium Registries

3:15 PM **MPM-A1.2**
A Monte Carlo Evaluation of an Unusual Contamination Incident
Kramer, G., Capello, K., Kedzior, S.
Health Canada

3:30 - 4:15 PM **Ballroom A**

MPM-A2: Biokinetics

Co-Chairs: Jay MacLellan, Gary Kramer

3:30 PM **MPM-A2.1**
A Generic Biokinetic Model for Carbon-14
Manger, R.
Oak Ridge National Laboratory

3:45 PM **MPM-A2.2**
Biokinetics of Pu-238 Injected in Nonhuman Primates
Chelidze, N., Brey, R.R., Guilmette, R.A.
Idaho State University, Lovelace Respiratory Research Institute

4:00 PM **MPM-A2.3**
A Model of Plutonium Metabolism in Human with Ca-DTPA
Schadilov, A.E., Erykalov, A.V., Khokhryakov, V.F.
Southern Urals Biophysics Institute

3:00 - 4:15 PM

Ballroom B

MPM-B: Instrumentation I

Co-Chairs: Steve Farmer, Frazier Bronson

3:00 PM **MPM-B.1**
Automating Neutron Solid State Track Detector Measurements
Fairchild, R., Tjong, L., Wright, T.
Nebraska Wesleyan University, Australian Radiation Protection and Nuclear Safety Agency

3:15 PM **MPM-B.2**
In-situ Radiation Monitoring with Spectrometric Capabilities: Implementation of LaBr₃ Spectrometers on Environmental Continuous Air Monitor
Geryes, D., Manificat, D., Debayle, M.
IRSN

3:30 PM **MPM-B.3**
Wipe Absorption in Gas Proportional Counter Measurements
Zhu, S., Sedrick, C.
Army Radiation Standards Laboratory

3:45 PM **MPM-B.4**
Field Evaluation of Portable Neutron Survey Instrumentation
*Barcal, K.K., Walter, J.F., Farmer, S.**
Sandia National Labs

4:00 PM **MPM-B.5**
Initial Tests of Advanced Efficiency Calibration Algorithms that Allow Multiple Complex Objects to be Superimposed in the Same Measurement Geometry
Bronson, F.L., Atrashkevich, V.
Canberra, Consultant

3:00 - 5:00 PM

Ballroom C

MPM-C: Decontamination and Decommissioning

Co-Chairs: Tom Hansen, Ken Kasper

3:00 PM **MPM-C.1**
Decommissioning Composite Sampling and Regulatory Guidance
Watson, B., Clements, J., Vitkus, T.
US Nuclear Regulatory Commission, ORISE

3:15 PM **MPM-C.2**
Understanding EPA's PRG Calculator
Terry, R.
US Environmental Protection Agency Region 9

3:30 PM **MPM-C.3**
Minimizing Pitfalls of Varying Characterization Approaches by Bridging the Gap Between Data Quality Objectives
Harpenau, E.M., Vitkus, T.J.
Oak Ridge Associated Universities

3:45 PM **MPM-C.4**
Conservatism and the Translation of Release Criteria
Hansen, T.
Ameriphysics, LLC

4:00 PM **MPM-C.5**
The Final Demise of East Tennessee Technology Park Building K-33
King, D.
Oak Ridge Associated Universities

4:15 PM **MPM-C.6**
Process Knowledge Data Gathering and Reporting in Support of Decommissioning
King, D.
Oak Ridge Associated Universities

4:30 PM **MPM-C.7**
Characterization of Contaminated Areas Using Gray-Qb
*Coleman, J., Farfan, E.**
Savannah River National Laboratory

4:45 PM **MPM-C.8**
Film-Based Radionuclide Identification Technology for Characterization of Contaminated Areas
Coleman, J., Farfan, E.
Savannah River National Laboratory

3:00 - 4:00 PM

2A

MPM-D: Bioeffect/Radiobiology

Chair: Brant Ulsh

3:00 PM **MPM-D.1**
Uniform Radiation Irradiation for Cell Exposure in an Incubator
Jung, J., Smith, G., Guilmette, R., Schoep, D.
East Carolina University, New Mexico State University, Lovelace Respiratory Research Institute

3:15 PM **MPM-D.2**
Involvement of Different Mechanisms in Heavy Ion and Gamma Ray Induced Hepatocellular Carcinoma of Mice
Liu, X., Bedford, J., Ray, F., Genik, P., Fallgren, C., Battaglia, Ullrich, R., Johnson, T., Weil, M.
Colorado State University, University of Texas Medical Branch at Galveston

3:30 PM **MPM-D.3**
Mechanism of Nuclear Transmutations in the Biological Culture
Moawad, E.
A Member of the Korean Society of Nuclear Medicine

3:45 PM **MPM-D.4**
Apoptosis of Blood Lymphocytes at Late Time After Chronic Radiation Exposure in Humans
Blinova, E.A., Veremeyeva, G.A., Akleyev, A.V.
URCRM, Chelyabinsk

3:00 - 4:00 PM

2 B&C

MPM-E: Waste Management

Co-Chairs: Robert Hayes and Jack Kraus

3:00 PM

MPM-E.1

Public Release Limits for Uranium Contaminant from Uranium Mining: Historical, Legal, Scientific and Practical Basis

Miaullis, A.

Colorado State University

3:15 PM

MPM-E.2

What is the Waste Isolation Pilot Plant? A Genuine American Treasure!

Hayes, R.

WIPP

3:30 PM

MPM-E.3

Recent Challenges and Accomplishments in Characterizing Sealed Sources for Disposition to the Waste Isolation Pilot Plant

Witkowski, I., Feldman, A., Pearson, M.W.

Los Alamos National Laboratory

3:45 PM

MPM-E.4

Biodegradable Protective Clothing for a Nuclear Facility

*Cournoyer, M.E., George, G.L., Blask, C.L., Wannigman, D.L.**

Los Alamos National Laboratory

3:00-4:30 PM

2 D&E

MPM-F: Special Session: The Fukushima Incident

Co-Chairs: Eric Golden, Seth Kanter

3:00 PM

MPM-F.1

The Fukushima Accident and Recovery: Challenges Ahead

Lake, B.

Barrett Consulting, LLC

4:00 PM

MPM-F.2

Radiological Releases From Major Nuclear Reactor Accidents: Three Mile Island, Chernobyl, and Fukushima

Simpkins, A.A., Kennedy, Jr., W.E.

Dade Moeller

4:15 PM

MPM-F.3

Risk Analysis Implications of the Fukushima Reactor Accidents

Kennedy, Jr., W.E., Moeller, M.P.

Dade Moeller

TUESDAY

7:00-8:00 AM

Ballroom A

CEL4 Nobody Notices a Clean Window: A History of Successes in Radiation Protection

Daniel J. Strom

Pacific Northwest National Laboratory

7:00-8:00 AM

Ballroom B

CEL5 ANSI N43.1 Standard Draft: Radiation Safety for the Design and Operation of Particle Accelerators

James C. Liu, Lawrence S. Walker

Radiation Protection Department, SLAC, LANSCE, Los Alamos National Laboratory, Los Alamos, NM

8:15 AM - Noon

Ballroom A

TAM-A: Medical Health Physics

Co-Chairs: Victoria Morris, Mary Ellen Jafari

8:15 AM

TAM-A.1

What Dose and Where Does It Come From?

Morris, V., Lemen, L., Gelfand, M.

University of Cincinnati, Cincinnati Children's Hospital

8:30 AM

TAM-A.2

A Smartphone APP for Tracking Medical CT Doses

Schulte, N., Ding, A., Xu, W., Caracappa, P., Xu, X.

Rensselaer Polytechnic Institute

8:45 AM

TAM-A.3

To Shield or Not to Shield CT Patients?

Johnson, P., Dong, F., Davros, W.

Cleveland Clinic

9:00 AM

TAM-A.4

Reducing CT Radiation Dose; A Community Hospital's Experience

Jafari, M.

Gundersen Lutheran Health System

9:15 AM

TAM-A.5

Federal Guidance for Diagnostic and Interventional X-Ray Procedures

Keith, L., Boyd, M., Sears, S., Miller, D., Leidholdt, E., Hill, D., Winston, J.

US Environmental Protection Agency, US Navy, Food and Drug Administration, Department of Veterans Affairs, Department of Labor, Occupational Safety and Health Administration, Commonwealth of Pennsylvania

9:30 AM

TAM-A.6

Heart Shift and Reduction in Heart Dose to Left-Breast Cancer Patients Using the Deep Inspiration Breath Hold Technique

Vognetz, J.A., Fallahian, N., Jones, A.O., Gergel, T.J., Veale, C.J., Treas, J.B., Simpson, D.R.

Bloomsburg University of Pennsylvania, Geisinger Medical Center

9:45 AM

BREAK in Exhibit Hall

10:15 AM

TAM-A.7

Sestamibi Redistribution Measurement Defines Ischemic Coronary Artery Lumen Disease

Fleming, R., Harrington, G.

Cardiovascular Consulting, UNI

10:30 AM

TAM-A.8

Use of Hybrid Phantoms for Individualized Dose Monitoring in Interventional Fluoroscopy

Bolch, W., Johnson, P., Borrego, D., Johnson, K., Siragusa, D.

University of Florida

10:45 AM

TAM-A.9

Radiopharmaceutical Dose Estimates Reflecting Recent Model Changes

Stabin, M.

Vanderbilt University

11:00 AM

TAM-A.10

The UF Family of Pediatric Patient-Dependent Phantoms for Medical Dose Reconstruction

Dziadon, A., Geyer, A., Lee, C., Johnson, P., Wayson, M., Bolch, W.

University of Florida, National Cancer Institute

11:15 AM

TAM-A.11

The Effect of Patient Obesity on PET/CT Imaging Dose Using a Phantom with a Body Mass Index of 45

Mille, M., Ding, A., Liu, T., Na, Y., Caracappa, P., Xu, X.

Rensselaer Polytechnic Institute

11:30 AM

TAM-A.12

Statistical and Dose Trend Analysis of Occupational Doses: A 20-Year Review

Al-Haj, A.N., Al-Gain, I., Lobrigo, A.M.

King Faisal Specialist Hospital & Research Centre, Saudi Arabia

11:45 AM

TAM-A.13

PET/CT Patient Doses and Staff Exposures: Is There a Need for Optimization?

Al-Haj, A.N., Lobrigo, A.M., Arafah, A., Parker, R.

King Faisal Specialist Hospital & Research Centre, Saudi Arabia

8:30 - 11:45 AM

Ballroom B

TAM-B: Internal II

Co-Chairs: Jay MacLellan, Naomi Harley

8:30 AM

TAM-B.1

Comparison of Two Leg Phantoms Containing Am-241 in Bone

Kramer, G., Hauck, B., Capello, K., Rühm, W., Broggio, D., Franck, D., Lopez, M., Navarro, T., Navarro, J., Tolmachev, S.

Health Canada, Helmholtz Zentrum München, Institut de Radioprotection et de Sûreté Nucléaire, Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas, US Transuranium & Uranium Registries

8:45 AM **TAM-B.2**
Design and Implementation of an Internal Monitoring Program at a Low-Level Radioactive Waste Processing and Storage Facility
Shaw, C., Kraus, J., Kirk, S.
WCS

9:00 AM **TAM-B.3**
Age Dependence in Dose Rates in the Enamel of Incisors Contaminated by ⁹⁰Sr
Volchkova, A., Shishkina, E.
URCRM, Chelyabinsk

9:15 AM **TAM-B.4**
Modeling of Obese Individuals using Automatic Deformation of Mesh-Based Computational Phantoms
Liu, T., Ding, A., Caracappa, P., Xu, X.
Rensselaer Polytechnic Institute

9:30 AM **TAM-B.5**
Enchantment of Bioassay Software Application
Eckerman, K.F., Killough, G.G., Ward, R.C., Lee, L.E.
Oak Ridge National Laboratory, Hendecagon Corp., University of Tennessee

9:45 AM **TAM-B.6**
Measurement of the Indoor/Outdoor Radon Decay Product Equilibrium Factor (Feq) Using ²¹⁰Pb/²¹⁰Po
Harley, N., Chittaporn, P.
NYU School of Medicine

10:00 AM **BREAK in Exhibit Hall**

10:30 AM **TAM-B.7**
Linear Dimensions and Volumes of Human Lungs Obtained from CT Images
Kramer, G., Capello, K., Bearrs, B., Lauzon, A., Normandeau, L.
Health Canada, Centre Hospitalier de l'Université de Montréal

10:45 AM **TAM-B.8**
A Bayesian Method for Identifying Contaminated Detectors in Low-Level Alpha Spectrometers
MacLellan, J., Strom, D., Joyce, K.
Pacific Northwest National Laboratory

11:00 AM **TAM-B.9**
Doses Due to "Other" Excretion Pathways in Biokinetic Models - Sweat
Breustedt, B., Blanchardon, E., Castellani, C., Giusani, A., Li, W., Marsh, J., Nosske, D., Oeh, U., Lopez, M.
Karlsruhe Institute of Technology (KIT), Germany, Institut de Radioprotection et de Surete Nucleaire (IRSN), France, ENEA, Radiation Protection Institute, Italy, BfS, Federal Office for Radiation Protection, Oberschleißheim, Germany, HMGU, Helmholtz Zentrum Muenchen, Germany, HPA, Radiation Protection Division, UK, CIEMAT, Departamento de Medio Ambiente, Spain

11:15 AM **TAM-B.10**
Calibration & Use of a Capintec Captus 3000 Portable Thyroid Uptake System for Iodine-125 Bioassay Measurements Supporting Personnel Dosimetry
Baker, T., Baehr, W.
US Environmental Protection Agency, Francis Marion University

11:30 AM **TAM-B.11**
Delta Ray Production from Galactic Cosmic Rays Traversing Water Target
Cox, B.
Texas A&M University

8:30 AM - Noon **Ballroom C**

**TAM-C: Environmental/Radon Section
Special Session: Radioactivity in the
Aquatic Environment**

Co-Chairs: Tim Jannik, Michael Boyd

8:30 AM **TAM-C.1**
How Much Refinement is Possible for Ecological Risk Assessment of Uranium in Freshwaters?
Beaugelin-Seiller, K., Garnier-Laplace, J., Gilbin, R., Fevrier, L.
Institut de Radioprotection et de Sûreté Nucléaire, France

9:00 AM **TAM-C.2**
Doses to Marine Biota Arising from Radioactive Discharges from Cap de La Hague
Chambers, D.B.
SENES Consultants Limited

9:30 AM **TAM-C.3**
A Review of the Current Capabilities to Detect Drinking Water Radioactivity Levels in Real Time
Mackney, D.
US Environmental Protection Agency

10:00 AM **BREAK in Exhibit Hall**

10:30 AM **TAM-C.4**
Development of Dual-Functionality Media for the Simultaneous Concentration and Detection of Non-Gamma-Ray Emitting Radionuclides in Water
DeVol, T.A., Grogan, K.P., Seliman, A.F.
Clemson University, Egyptian Atomic Energy Authority

10:45 AM **TAM-C.5**
The Transfer of Cs Through Aquatic Trophic Levels Following Releases into Experimental Ponds
Martinez, N., Johnson, T., Hinton, T., Whicker, W., Pinder, J.
Colorado State University, Institut for Radiation Protection and Nuclear Safety

11:00 AM **TAM-C.6**
The Dnieper River Aquatic System Radioactive Contamination: Twenty Five Years of Natural Attenuation and Remediation
Voitsekhovych, O., Kanivets, V., Laptev, G., Bugay, D., Kireev, S.
Meteorological Institute - Ukraine

11:30 AM **TAM-C.7**
Overview of the Issues Concerning the Natural Drawdown of the Chernobyl Nuclear Power Plant Cooling Pond
Oskolkov, B., Bondarkov, M., Maksymenko, A., Maksymenko, V., Martynenko, V., Farfan, E., Jannik, G., Marra, J.*
Chernobyl Center for Nuclear Safety Radioactive Waste and Radioecology, International Radioecology Laboratory, Ukraine, Savannah River National Laboratory

11:45 AM **TAM-C.8**
Radiation Dose Assessment for the Biota of Ecosystems in the Shoreline Zone of the Chernobyl Nuclear Power Plant Cooling Pond
Oskolkov, B.Ya, Bondarkov, M.D., Gashchak, S.P., Maksimenko, A.V., Hinton, T.G., Jannik, G.T., Farfan, E.B.*
International Radioecology Laboratory, Chernobyl Center for Nuclear Safety, Ukraine, Institute for Radio-protection and Nuclear Safety (IRSN), France, Savannah River National Laboratory

8:30 AM - Noon **2A**

TAM-D: External Dosimetry

Chair: Tim Taulbee

8:30 AM **TAM-D.1**
Development of a Dose Algorithm for Measuring Hp(10), Hp(3) and Hp(0.07) with the Harshaw 8825 BGN Thermoluminescent Dosimeter Based on ANSI/HPS N13.11-2009
Rathbone, B.A.
Pacific Northwest National Laboratory

8:45 AM **TAM-D.2**
The Assessment of Effective Dose from Personnel Dosimeter Readings Using Latest Voxel Phantoms and ICRP 103 Recommendations
Su, L., Xu, X.G.
Rensselaer Polytechnic Institute

9:00 AM **TAM-D.3**
Comparison on Characteristics of Optically Stimulated Luminescent Dosimeters and Thermoluminescent Dosimeters
Yeh, S.H., Kao, T.L.
Tzu Chi College of Technology

9:15 AM **TAM-D.4**
MCNP Simulating OSL Ring Response Matrix for X-Ray Spectrums
Xia, Z., Salasky, M., Yahnke, C.
SLAC National Accelerator Center, Landauer INC

9:30 AM **TAM-D.5**
Stability of DXRAD Extremity Dosimeters
Romanyukha, A., Voss, S.P.
Naval Dosimetry Center

9:45 AM **BREAK in Exhibit Hall**
10:15 AM **TAM-D.6**
Radiation Doses to Skin from Dermal Contamination
Apostoaiei, A.I., Kocher, D.C.
SENES Oak Ridge, Inc.

10:30 AM **TAM-D.7**
Contact Dose Rates from Encapsulated Sources
Waller, E., Cleary, J., Goans, R.
UOIT, MJW/REAC/TS

10:45 AM **TAM-D.8**
Dose Estimates for the CRaTER Instrument on LRO using HETC-HEDS
Anderson, J.A., Townsend, L.W.
University of Tennessee, Knoxville

11:00 AM **TAM-D.9**
Improvement of Algorithm for Evaluation of Uncertainties for Electron Paramagnetic Resonance Dosimetry on Tooth Enamel
Timofeev, Y.S., Shishkina, E.A., Ivanov, D.V., Zalyapin, V.I.
South Ural State University, Urals Research Center for Radiation Medicine, Institute of Metal Physics, Russian Academy of Sciences

11:15 AM **TAM-D.10**
Use of Simple Equations to Determine Air Kerma from X-Ray Beam of a Radiographic Tube
Soares, F., Costa, M.
IF-SC / Brasil

11:30 AM **TAM-D.11**
Federal Databank of Individual Dose Estimates of the Public and the Workers within the Jurisdiction of the Federal Medical Biological Agency of Russia
Semenova, Y.V., Kosterev, V.V., Tsovyarov, A.G.
Burnasyan Federal Medical Biophysical Center of Federal Medical Biological Agency of Russia, Moscow, National Research Nuclear University Moscow Engineering Physics Institute, Moscow

11:45 AM **TAM-D.12**
Occupational Radiation Exposure to Personnel in Veterinary Positron Emission Tomography
Martinez, N.E., Kraft, S.L., Ryan, S.D., Johnson, T.E.
Colorado State University

8:15 AM - Noon **2 B&C**

TAM-E: AAHP Special Session: Radiation Protection: How Did We Get Here; Where Should We Have Gone?

Co-Chairs: Paul Stansbury, Rich Vetter

8:15 AM **Introductory Remarks**

Paul Stansbury

8:30 AM **TAM-E.1**

How We Formed Our Profession - The Psychology of Radiation Safety

Johnson, R.H.

Dade Moeller Radiation Safety Academy

9:00 AM **TAM-E.2**

The Role of IRPA in Improving Radiation Protection

Toohey, R.E.

ORAU

9:30 AM **BREAK in Exhibit Hall**

10:00 AM **TAM-E.3**

Evolution of HPS Influence in Public Policy

Vetter, R.

Health Physics Society

10:30 AM **TAM-E.4**

US Customs and Border Protection's Approach to Radiation Protection

Whitman, R.

IndianaUniversity, PurdueUniversity

11:00 AM **TAM-E.5**

A Short History of Radiation Protection at the U.S. Environmental Protection Agency

Boyd, M.

US Environmental Protection Agency

11:30 AM **TAM-E.6**

TBD

8:15 AM - Noon **2 D&E**

TAM-F: Special Session: Engaging Science Teachers in the 21st Century - More Than Science Teacher Workshops

Chair: Mike Lewandowski

8:15 AM **TAM-F.1**

Reflections of the 2010 Eichholz Outstanding Science Teacher

Hudson, S.

Tuttle Middle School, Indiana

8:30 AM **TAM-F.2**

Opportunities for Engagement: Presenting to Science Teachers and Students

Johnston, T.

National Institute of Standards and Technology

8:45 AM **TAM-F.3**

Chapter Experience with Science Teachers' Workshops

Evans, A.

HPS South Texas Chapter

9:00 AM **TAM-F.4**

Radioactivity and Radiation: Atlanta Chapter's Experience with Aligning Science Teacher Workshops Material with Georgia's Educational Objectives

*Nichols, M., Shonka, J., Collins, D., Pepper, A., Harde-
man, Jr, J., Philpotts, D.*

*Analytical Uncertainty LLC, Shonka Research Asso-
ciates, US Nuclear Regulatory Commission, Georgia
Perimeter College, Georgia Department of Natural Re-
sources, Georgia Power Company*

9:15 AM **TAM-F.5**

Recipe for Successful Science Teacher Workshops

Tarantino, C.A.

Dominion Generation

9:30 AM **TAM-F.6**

Building Relationships with Teachers: The ANS Approach

Vincent, C.

American Nuclear Society

9:45 AM **BREAK in Exhibit Hall**

10:15 AM **TAM-F.7**

Connecting with Teachers: Reflections on Three Years at the Hoosier Association of Science Teachers, Inc. (HASTI) Conference

Mays, T., Kay, S.

Eli Lilly

10:30 AM **TAM-F.8**

Simple, Inexpensive Nuclear Instrumentation for Elementary and Secondary Teachers

Lewandowski, M.A.

North Central Chapter HPS

10:45 AM **TAM-F.9**

Working with Non-Nuclear Partners in Science Teacher Support Activities

Masih, S., Donahue, M., Barrera, E., Lewandowski, M.

*University of Missouri Kansas City, US Army, 3M Cor-
poration*

11:00 AM **Roundtable**

11:45 AM **Working Session**

2:30 - 4:00 PM

Ballroom A

TPM-A: Instrumentation II

Co-Chairs: Frazier Bronson, Glenn Roberts

2:30 PM

TPM-A.1

A Study on the Detection Efficiency of Ra-223 in the RaDeCC System

*Chang, Z., Moore, W.S., Boaz, B.K., James, U.A.
SC State University, University of South Carolina*

2:45 PM

TPM-A.2

The Use of the ISOCS Mathematical Efficiency Calibration Software to Design a Versatile Sample Assay Geometry and Compute the Efficiency Assay Uncertainty

Bronson, F.L.

Canberra

3:00 PM

TPM-A.3

Nuclear Spectroscopy with Nanophosphor in Glass

Kang, Z., Rosson, R., Barta, B., Nadler, J., Wagner, B., Kahn, B.
Georgia Tech*

3:15 PM

TPM-A.4

Comparison of Background Performance of High Purity Germanium Detectors in Shielded Environments

*Morris, K., Bronson, F., Hau, I., Mueller, W.
Canberra Industries*

3:30 PM

TPM-A.5

The Benefits of Innovative Automated Radiological Monitoring

Roberts, G.

UniTech Services Group, Inc.

3:45 PM

TPM-A.6

Gamma Detection Sensitivities for Mobile Ground Scanning Systems

Thompson, S.

HyroGeoLogic, Inc. (HGL)

4:00 PM

BREAK in Exhibit Hall

2:15 - 5:45 PM

Ballroom B

TPM-B: Special Session: ANSI-HPS Consensus Standards Process for N13 and N43

Co-Chairs: Tracy Ikenberry, William Morris

2:15 PM

TPM-B.1

N13 and HPS - Developing Consensus Standards for Radiation Protection

Ikenberry, T., Johnson, M., Johnson, N., Forrest, R., Potter, C., Lynch, T.

Dade Moeller, PNNL, Burk, Inc., UPenn, SNL

2:30 PM

TPM-B.2

Pending Revision of HPS/ANSI N13.30 Performance Criteria for Radiobioassay

MacLellan, J.

Pacific Northwest National Laboratory

2:45 PM

TPM-B.3

Revision of ANSI HPS N13.14 Bioassay Programs for Tritium

Potter, C.A., Carbaugh, E.H., Cheng, Y.S., Hill, R.L., Kramer, G.H., Waters, T.L., Wolodarsky, W.H.

Sandia National Laboratories, Pacific Northwest National Laboratory, Lovelace Respiratory Research Institute, Health Canada, Los Alamos National Laboratory

3:00 PM

TPM-B.4

ANSI/HPS N13.8 Update: An Opportunity to Advance Radioactive Air Sampling Methods for Radiation Protection in Uranium Mines

Hoover, M.

NIOSH

3:15 PM

TPM-B.5

Surface and Volume Clearance Standard ANSI/HPS N13.12: Current Status

Kennedy, Jr., W.E.

Dade Moeller & Associates

3:30 PM

TPM-B.6

The Revision of the 1999 Version of ANSI/HPS N13.1

Glissmeyer, J.

Pacific Northwest National Laboratory

3:45 PM

TPM-B.7

ANSI/HPS Consensus Standard N13.3: Dosimetry for Criticality Accidents

Ward, D.C.

Sandia National Laboratories

4:00 PM

BREAK in Exhibit Hall

4:30 PM

TPM-B.8

N43 Accredited Standard Committee on Equipment for Non-medical Radiation Applications: Scope of Current Activities with Brief History

Morris, W. J.

Consultant

4:45 PM

TPM-B.9

ANSI N43.1 Standard Draft: Radiation Safety for the Design and Operation of Particle Accelerators

Walker, L., Liu, J.

Los Alamos National Lab, Stanford Linear Accelerator Center

5:00 PM

TPM-B.10

Radiation Safety for Active Interrogation Systems

Khan, S.M.

DHS/CBP

5:15 PM

TPM-B.11

Status of ANSI N42 Standards for Health Physics Instrumentation

Cox, M.

N42

5:30 PM

TPM-B.12

TBD

2:30 - 5:15 PM **Ballroom C**

**TPM-C: Special Session: NESHAPs
Radioactive Air Meeting**

Co-Chairs: Matthew Barnett, Gustavo Vazquez

2:30 - 5:15 PM **2A**

TPM-D: Risk Analysis

Co-Chairs: Steve Simon, Otto Raabe

2:30 PM **TPM-D.1**

A New Look at Radiation Carcinogenesis
Raabe, O.G.
University of California, Davis

2:45 PM **TPM-D.2**

BEIR VII Models and Updates for Calculating Radiogenic Cancer Incidence and Mortality Risk
Abadia, A., Bolch, W., Pawel, D.
University of Florida, US Environmental Protection Agency, Washington DC

3:00 PM **TPM-D.3**

Demonstration of a Dose Estimation and Risk Analysis Method for Complex Radiation Dose Reconstructions
Simon, S.L., Kwon, D., Weinstock, R., Hoffman, F.
National Cancer Institute, National Institutes of Health, SENES Oak Ridge

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

Evaluating Uncertainty in Dose and Dose-Rate Effectiveness Factors for Low-LET Radiation for Use in Risk Estimation
*Trabalka, J.R., Apostoaei, A.I. *, Hoffman, F.O., Kocher, D.C., Thomas, B.A.*
SENES Oak Ridge, Inc.

3:30 PM **TPM-D.5**

A Biophysical Model for Estimating the Relative Biological Effectiveness of Photons and Electrons
Bellamy, M., Eckerman, K., Hertel, N.
Oak Ridge National Lab, Georgia Institute of Technology

3:45 PM **BREAK in Exhibit Hall**

4:15 PM **TPM-D.6**

Reference Radiation for Cosmic Rays in RBE Research
Feng, S.
Texas A&M University

4:30 PM **TPM-D.7**

Influence of Bystander and Adaptive Response Non-Linear Effects on Radon Case-Control Studies
Leonard, B.E.
International Academy of Hi-Tech Services Inc.

4:45 PM **TPM-D.8**

Radiation Risk of Lung Cancer Incidence with Regard to the Histological Tumor Type
Labutina, E., Kuznetsova, I.
Southern Urals Biophysics Institute (SUBI)

5:00 PM **TPM-D.9**

Assessment of Radiogenic Risk of Mortality from Ischemic Heart Disease for Members of the Techa River Cohort
Silkin, S.S., Krestinina, L.Y.
Urals Research Center for Radiation Medicine

2:30 - 5:30 PM **2 B&C**

TPM-E: AAHP Special Session: Radiation Protection: How Did We Get Here; Where Should We Have Gone?

Co-Chairs: Paul Stansbury, Dan Strom

2:30 PM **TPM-E.1**

Radiation Protection at the Department of Energy: Politics and Science - A Historical Perspective
Jones, R.
Executive Consultant

3:00 PM **TPM-E.2**

Hijacked by Politics? Science, Policy, and the Nuclear Regulatory Commission
Wellock, T., Jones, C.
USNRC

3:30 PM **BREAK in Exhibit Hall**

4:00 PM **TPM-E.3**

The Evolution of Military Health Physics: Lessons Learned and Future Directions
Melanson, M.
AFRRRI

4:30 PM **TPM-E.4**

The Rise and Fall of Paternalism in Radiation Protection
Strom, D.
Pacific Northwest National Laboratory

5:00 PM **Open Discussion**

Stansbury, P.

5:30 PM **AAHP Business Meeting**

**TPM-F: IRPA Input Special Session -
Sharing HPS Perspectives with the
International Community**

Co-Chairs: Barbara Hamrick, Kelly Classic

2:30 PM **TPM-F.1**
New Build Reactors: Current HPS Thinking; Introduction to the IRPA Input Session
Classic, K., Hamrick, B.L.
Mayo Clinic, University of California, Irvine Medical Center

2:45 PM **TPM-F.2**
The Nuclear Renaissance - Illusion or Reality?
Goldin, E.
Southern California Edison

3:00 PM **TPM-F.3**
Recent Developments in Low-Level Radioactive Waste Rules and Policy: A New Site Under Construction May Provide a National Solution
Kirk, J.S.
Waste Control Specialists LLC

3:30 PM **Discussion**

3:45 PM **BREAK in Exhibit Hall**

4:10 PM **TPM-F.4**
Managing Medical Exposures: Current HPS Thinking
Classic, K.
Mayo Clinic

4:15 PM **TPM-F.5**
"Image Gently" Our Future Generations
Lanza, J.
Florida Department of Health

4:30 PM **TPM-F.6**
Managing Medical Exposures: Response to Therapy Events
Classic, K.
Mayo Clinic

4:45 PM **Discussion**

4:55 **TPM-F.7**
HPS Views on the Adoption of ICRP Guidelines
Hamrick, B.L.
University of California, Irvine Medical Center

5:00 PM **TPM-F.8**
Options to Revise the United States Nuclear Regulatory Commission's Radiation Protection Regulations
Morgan-Butler, K., Cool, D.
United States Nuclear Regulatory Commission

5:30 PM **Facilitated Discussion**

WEDNESDAY

7:00-8:00 AM

Ballroom A

CEL6 ABHP Exam Fundamentals – Tips for Successfully Completing the Certification Process
Charles (Gus) Potter, Kent Lambert
Sandia National Laboratories, Drexel University

7:00-8:00 AM

Ballroom B

CEL7 Diagnostic Reference Levels for CT Scanners
Ed Waller
University of Ontario Institute of Technology

7:00-8:00 AM

Ballroom C

CEL8 Innovative Approaches to Molybdenum-99 Production (that May or May Not Work)
Darrell R. Fisher
Isotope Sciences Program, Pacific Northwest National Laboratory

8:15 - 10:15 AM

Ballroom A

WAM-A1: Emergency Planning/Response

Co-Chairs: Ed Waller, Craig Marianno

8:15 AM

WAM-A1.1

Management of Victims with Embedded High Dose Rate Shrapnel Wounds from the Detonation of a Radiological Dispersal Device (“Dirty Bomb”) - an Update
Bushberg, J.T., Case, J.P.
University of California, Davis Medical Center

8:30 AM

WAM-A1.2

PDA Software for Radiological Triage of Internal Gamma-Emitting Radionuclide Contamination using Standard Portable Survey Instrumentation
Juneja, B., Kannan, S., Bolch, W.
University of Florida

8:45 AM

WAM-A1.3

Operational Experience with Radiological Triage and Treatment Tools
Waller, E., Österreicher, J., Souková, J.
UOIT, Czech Military

9:00 AM

WAM-A1.4

Communicating with the Public Following Detonation of an Improvised Nuclear Device
Miller, C., McCurley, C.
Centers for Disease Control & Prevention

9:15 AM

WAM-A1.5

Application of the Oak Ridge Isotope Generation Code and the Defense Land Fallout Interpretive Code to National Technical Nuclear Forensics
Jodoin, V., Lee, R., Peplow, D., Lefebvre, J.
Oak Ridge National Laboratory

9:30 AM

WAM-A1.6

Radiation Transport Simulation Studies using MCNP for a Cow Phantom to Determine an Optimal Detector Configuration for New Livestock Portal
Justina, J., Marianno, C., Chirayath, S.*
Texas A&M University

9:45 AM

WAM-A1.7

The Research on Low Altitude Measurement Technique for Nuclear Terrorism Emergency: A Case Study on the Detonation of Radiological Dispersal Device
Liu, R., Xiao, X., Luo, Z.
China Institute of Atomic Energy

10:00 AM

WAM-A1.8

A Decision Tool for Population Screening and Protection in Response to Radiological Events
Lee, E., Ansari, A., Casper, K.
Georgia Institute of Technology, Centers for Disease Control and Prevention

10:15 AM

BREAK in Exhibit Hall

10:45 - 11:45 AM

Ballroom A

WAM-A2: Homeland Security

Co-Chairs: Rick Whitman, Wayne Gaul

10:45 AM

WAM-A2.1

Delivering Radiation Safety During CBRN Forensics
Cairns, J.M.
AWE, Aldermaston

11:00 AM

WAM-A2.2

Integration of Human Models with a Virtual Cityscape Model for Use in Radiation-Related Event Simulation
Vazquez, J., Ding, A., Caracappa, P., Xu, X.
Rensselaer Polytechnic Institute

11:15 AM

WAM-A2.3

A Review of Neutron Detection Methods in the Age of the ³He Shortage
Rogers, J., Marianno, C.
Texas A&M University

11:30 AM

WAM-A2.4

Design of a Virtual Model of a Hand-Held Germanium Detector and a Voxelized ICRP Whole Body Phantom: A Monte Carlo Study
Ahmed, A., Kramer, G., Kennedy, B., Keyser, R.
National Internal Radiation Assessment Section, Radiation Protection Bureau, Health Canada, NIRAS, RPB, HC, ORTEC, Oak Ridge

8:30 AM - Noon

Ballroom B

WAM-B: Operational Health Physics

Co-Chairs: Robert Hayes, Dennis Hadlock

8:30 AM

WAM-B.1

Efficacy of Coffee Makers at Removing Contaminants
Nguyen, V., Johnson, T., Brattin, B., Dooley, G., Ramsdell, H.

Colorado State University, Fort Collins

8:45 AM

WAM-B.2

Empirical Comparison of Neutron Activation Sample Analysis Methods

Gillenwalters, E., Johnson, T., Pinder, J., Kearney, P.
Colorado State University, Fort Collins

9:00 AM

WAM-B.3

Analysis of Extremity Exposure at the Idaho National Laboratory's Health Physics Instrumentation Laboratory

Rynders, D., Christiansen, B., Butikofer, T., Burke, L.
Idaho National Laboratory

9:15 AM

WAM-B.4

Medical X-Ray Record Management System at a Large Academic Medical Center: An Overview
Krieman, C.

Duke University Health System, Durham, NC

9:30 AM

WAM-B.5

Two Years of Experience of Teaching Health Physics Online

Gregory, W.D.

West Kentucky Community and Technical College

9:45 AM

BREAK in Exhibit Hall

10:15 AM

WAM-B.6

Health Physics Challenges Encountered When Opening a New Radiological Facility

Worley, P., Kasper, K., Njoku, E.

Lawrence Livermore National Security, LLC, Livermore Site Office (DOE)

10:30 AM

WAM-B.7

The Psychology of Radiation Safety - How to Answer Questions

Johnson, R.H.

Dade Moeller Radiation Safety Academy

10:45 AM

WAM-B.8

A Comparison of MCNP Modeling against Empirical Data for the Measurement of the Effectiveness of Lead Apron Shielding

Adams, D., Lee, M., George, G., Brandl, A., Johnson, T.

Colorado State University, LANL

11:00 AM

WAM-B.9

Practical Application of Monte Carlo Simulation at Duke Free Electron Laser Laboratory (DFELL)

Woehr, W., Gunasingha, R.

Duke University Health Systems

11:15 AM

WAM-B.10

Use of a Portable HPGe for Counting Smears and Air Filters

Hayes, R.

WIPP

11:30 AM

WAM-B.11

Temporary Accommodation of Thyroid Cancer Patients to Reduce Public Dose Due to Iodine-131

Pickering, C.A., Williams, L.E., Dykes, J.N., Tejada, M.S., Yamauchi, D.M., Patricko, J.J.

City of Hope National Medical Center

11:45 AM

WAM-B.12

MILDOS Models for Modern In-Situ Recovery Facilities and the Identification of the Maximally Exposed Member of the Public

Manglass, L., Brown, S.

SENES Consultants, Ltd

8:30 AM - Noon

Ballroom C

WAM-C: Special Session: Characterization of the Fukushima Radiological Releases

Co-Chairs: Armin Ansari, William Rhodes

8:30 AM

WAM-C.1

The DOE Response: FRMAC without the "F"

Bowman, D.

US Department of Energy, NNSA

8:45 AM

WAM-C.2

The Challenges of the DOE Home Team's Response
Beal, W

US Department of Energy, NNSA

9:00 AM

WAM-C.3

Flying the 'Real' Thing

Lyons, C.

US Department of Energy, Remote Sensing Laboratory

9:15 AM

WAM-C.4

The Challenges of AMS Data Analysis During the Japan Response

M Reed

US Department of Energy, Remote Sensing Laboratory

9:30 AM

WAM-C.5

Challenges in Determining the Isotopic Mix from the Fukushima Daiichi Accident

Shanks, A.

Sandia National Laboratory

9:45 AM **WAM-C.6**
Gamma Spectral Measurements Performed Near Fukushima Daiichi Nuclear Power Plant
Smith, R.J.
Savannah River Nuclear Solutions

10:00 AM **BREAK in Exhibit Hall**

10:30 AM **WAM-C.7**
The Mysterious Source Term and Modeling
Nasstrom, J., Sugiyama, G.
Lawrence Livermore National Lab

10:45 AM **WAM-C.8**
Environmental Assessment in an Emergency - This is not a Drill
Musolino, S.
Brookhaven National Laboratory

11:00 AM **WAM-C.9**
Response of the U.S. Department of Health and Human Services in Protecting Americans in Japan During the Fukushima Nuclear Crisis
Coleman, C.N., Simon, S.L., Noska, M.A., Telfer, J.N., Bowman, T.*
ASPR/Health and Human Services & National Cancer Institute, Food and Drug Administration, Centers for Disease Control

11:15 AM **WAM-C.10**
EPA Response to the Fukushima Daiichi Reactors Incident
Tupin, E.A., Boyd, M.A., DeCair, S.D., Schultheisz, D.J.
US Environmental Protection Agency

11:30 AM **WAM-C.11**
US EPA RadNet Data from Fukushima
Fraass, R.G.
US Environmental Protection Agency

11:45 AM **WAM-C.12**
Fukushima Disaster Response: The States Perspective
Fordham, E
CRCPD

8:30 AM - Noon **2A**

WAM-D: Accelerator Section Special Session: Neutrons from Accelerators

Co-Chairs: Mike Grissom, Rich Brey

8:30 AM **WAM-D.1**
Chadwick's Neutron and the Role of New Particles in Accelerator Health Physics
Cossairt, J. (G. William Morgan Lecture)
Fermi National Accelerator Laboratory

9:30 AM **WAM-D.2**
Results from a High-Energy Neutron Dosimeter Inter-comparison Exercise
*Walker, L.S., McLean, T.D.**
Los Alamos National Laboratory

9:45 AM **WAM-D.3**
Calculated Neutron Skyshine Spectra and Dosimetric Implications as a Function of Distance and Source Shielding
Schwahn, S.O.
Oak Ridge National Laboratory

10:00 AM **BREAK in Exhibit Hall**

10:30 AM **WAM-D.4**
High Energy Neutrons: Past, Present and Future - Dosimetry, Measurement and Spectroscopy
Walker, L.S. (G. William Morgan Lecture)
Los Alamos National Laboratory

11:30 AM **WAM-D.5**
Analysis of Raw Dosimetry Results to Identify Impact of Neutron Skyshine
Schwahn, S.O., McMahan, K.L.
Oak Ridge National Laboratory

11:45 AM **WAM-D.6**
Benchmarking Heavy Ion Transport Codes
Ronningen, R.M., Kostin, M.A., Roberts, R.R., Tsang, M.Y.B., Remec, I., Heilbronn, L.H., Gabriel, T.A., Iwamoto, I.
Oak Ridge National Laboratory, University of Tennessee, Knoxville, Scientific Investigation and Development, Japan Atomic Energy Agency

8:30 AM - Noon **2 B&C**

WAM-E: Military Health Physics Special Session

Co-Chairs: Mark Melanson, Bill Hoak

8:30 AM **WAM-E.1**
AFRRI MRAT and NUWAIX 11
Woodruff, C.R.
Armed Forces Radiobiology Research Institute

9:00 AM **WAM-E.2**
Department of Defense's Support of Veteran Radiogenic Disease Compensation
Blake, P.
Defense Threat Reduction Agency

9:30 AM **WAM-E.3**
The Effects of the Urban Environment on the Propagation of Prompt Radiation Emitted from an Improvised Nuclear Device
Bergman, J., Kramer, K., Sanchez, B., Madrigal, J., Millage, K., Blake, P.
ARA, Inc., Defense Threat Reduction Agency

10:00 AM **BREAK in Exhibit Hall**

10:30 AM **WAM-E.4**
The Role of the Army Nuclear Medical Science Officer in the Global War on Terrorism
Melanson, M., Bower, M.
Armed Forces Radiobiology Research Institute, Brooke Army Medical Center

11:00 AM **WAM-E.5**
Dosimetry Support during Military Operations
Harris, W., Melanson, M.
US Army

11:30 AM **WAM-E.6**
Cf-252 Storage Mishap Leads to Dose Estimation for a Non-Radiation Worker
Thompson, A.
20th SUPCOM, US Army

8:30 AM - Noon **2 D&E**

WAM-F: Decommissioning Section Special Session: Field Implementation of Clearance Standards, Including Methods, Models and the Anticipated Impact from Changes in Regulations and Guidance

Co-Chairs: Dave Ottley, Wayne Glines

8:30 AM **WAM-F.1**
Clearance of Real and Personal Property Under New DOE Radiation Protection Directive
Vazquez, G., Corredor, C., Regnier, E., Wallo, A., Ostrowski, C.
US Department of Energy

9:00 AM **WAM-F.2**
TBD

9:30 AM **WAM-F.3**
Treasure Island - A Tale of the Value of Independent Verification at a Site of Historical Significance
Egidi, P.
Colorado Department of Public Health & Environment/ Conference of Radiation Control Program Directors

10:00 AM **BREAK in Exhibit Hall**

10:30 AM **WAM-F.4**
New IAEA Guidance Pertaining to Monitoring for Compliance with Exemption and Clearance Levels
*Rowat, J.H., Ljubenov, V., Draper, D.**
International Atomic Energy Agency, Vienna

11:00 AM **WAM-F.5**
Examples of the Impact of Standards on Innovation in Survey Instrumentation
Shonka, J.J.
SRA

11:30 AM **WAM-F.6**
Addressing Hot Spots at Hazardous Waste Sites
Abelquist, E., King, D., Vians, J., Miller, L.
ORAU, University of Tennessee

2:30 - 5:00 PM **Ballroom A**

WPM-A: Movies

2:30 - 5:00 PM **Ballroom B**

WPM-B: Contemporary Topics in Health Physics

Chair: Latha Vasudevan

2:30 PM **WPM-B.1**
Dosimetry of Wild Animals Where Radioisotopes Are Used in Their Natural Surrounding
Jo, M., McCarthy, W. B.
University of Nevada, Reno, Massachusetts Institute of Technology

2:45 PM **WPM-B.2**
Laser Damage Thresholds of Ex-Vivo Pig and Rabbit Corneas at 2500 and 2700 nm with 8 ns Laser Pulse Duration
Guo, Y., Johnson, T.
Colorado State University

3:00 PM **WPM-B.3**
Dose Reduction via Effective Scaffold Program Management
Hiatt, J., Elkins, J.
BHI Energy, Inc., TeamOne

3:15 PM **WPM-B.4**
Probabilistic Distribution of Background Cancer Risk Estimated using Cancer Incidence Data in United States
Hattori, T.
Central Research Institute of Electric Power Industry

3:30 PM **WPM-B.5**
Coordinated Efforts in Developing the Radiation Detection and Instrumentation Laboratory at Prairie View A&M University
Vasudevan, L., Aghara, S.
Prairie View A&M University

3:45 PM **BREAK**

4:15 PM **WPM-B.6**
Center for Radiation Protection Knowledge
Eckerman, K.F., Leggett, R.W., Manger, R.P., Bellamy, M.B.
Oak Ridge National Laboratory

4:30 PM **WPM-B.7**
That Law Makes No Sense
Hamrick, B.L.
University of California, Irvine

4:45 PM **WPM-B.8**
Developing a Radiation Protection Policy for UK Law Enforcement
Cairns, J. M
AWE, Aldermaston

2:30 - 3:30 PM Ballroom C

WPM-C1: Special Session: Consequences of the Fukushima Radiological Releases

Co-Chairs: Ed Tupin, Bruce Napier

2:30 PM WPM-C1.1

Screening Food Products in Japan
Westmoreland, JB, Moreland, SC
GEL Laboratories, LLC

2:45 PM WPM-C1.2

Radiological Situation in the Fukushima Daiichi Exclusion Zone and the Disposition of Livestock, Poultry and Pets Abandoned There
Cleveland, G.S.
US Department of Agriculture

3:00 PM WPM-C1.3

Monitoring Potentially-Contaminated Cargo from Japan: When is a Dose of "Public Health Concern?"
Miller, C.W., Whitcomb, R.C., Smith, J.M.
Centers for Disease Control, Scimetrika, LLC

3:15 PM WPM-C1.4

Collaborative Effort to Develop Practical Radiation Screening Protocols for Travelers Returning from Japan after the Fukushima Incident
Ansari, A., Chang, A., Martin, C., Nemhauser, J., McBurney, R., Salame-Alfie, A., Fisher-Tyler, F.
Centers for Disease Control and Prevention, Conference of Radiation Control Program Directors, New York State Department of Health, Delaware Division of Public Health

3:30 PM BREAK

4:00-5:15 PM Ballroom C

WPM-C2: Fukushima Public Information

Chair: Cyndi Jones

4:00 PM WPM-C2.1

Japan Nuclear Fears - Real and Perceived Dangers
Johnson, R.H.
Radiation Safety Counseling Institute

4:15 PM WPM-C2.2

Observations and Lessons from a Radiological Emergency Assistance Mission after the March 2011 Disaster in Japan
Karam, P.A., Uraneck, K., Becker, S.M.
Karam Consulting LLC, University of Alabama Birmingham

4:30 PM WPM-C2.3

What Do All These Numbers Mean? And What are These Crazy Units?
Watson, D.J., Strom, D.J., Seiple, T.E.
Pacific Northwest National Laboratory

4:45 PM WPM-C2.4

Fukushima Daiichi: Answering the Real Questions with Real Answers
Reed, A.
Remote Sensing Laboratory, DOE

5:00 PM WPM-C2.5

Continuity of Commerce in the Aftermath of Fukushima
Fellman, A.L.
Dade Moeller

2:30 - 5:00 PM 2A

WPM-D: Accelerator

Co-Chairs: Jason Harris, Lorraine Day

2:30 PM WPM-D.1

Characterization of Faraday Cup Response in a Broad High-Energy Electron Beam
Harris, J., Altic, N., Wells, D.*
Idaho State University

2:45 PM WPM-D.2

Estimates of Secondary Neutron Cross-Sections from Heavy Ion Reactions at High Energies Using HETC-HEDS
Bhatt, S., Townsend, L., Heilbronn, L.
The University of Tennessee

3:00 PM WPM-D.3

Shielding of RF Penetrations at Jefferson Lab
Kharashvili, G., Fassò, A., Degtiarenko, P., Vylet, V., Welch, K.B.
Jefferson Lab

3:15 PM WPM-D.4

Neutron Diffraction Experiment Hazard Rating
Walker, L., Duran, M., Lovato, L.
Los Alamos National Laboratory

3:30 PM WPM-D.5

Investigation of Real-Time Gamma Dosimetry
Mestari, M., Wells, D.
Idaho Accelerator Center

3:45 PM BREAK

4:15 PM **WPM-D.6**
Nuclear Activation Study of 32.8 MeV Linear Accelerator
Bragg, P.B.
Bechtel Marine Propulsion Corporation

4:30 PM **WPM-D.7**
Health Physics Considerations of Upgrades Planned for the CAMD Storage Ring
Marceau-Day, M.L.
LSU

4:45 PM **WPM-D.8**
Preliminary Radiation Hazard Analysis of X-ray Generated by High Intensity Laser Systems
*Qiu, R., Liu, J., Prinz, A., Rokni, S., Woods, M., Xia, Z.**
SLAC National Accelerator Center

2:30 - 5:15 PM **2 B&C**

**WPM-E: Military Health Physics
Special Session**

Co-Chairs: Mark Melanson, Bill Hoak

2:30 PM **WPM-E.1**
Using OSL Dosimeters to Evaluate Potential Doses to Operators of Whole-Body Security Screening Systems
Szrom, F., Jones, C.
Army Institute of Public Health

3:00 PM **WPM-E.2**
Planning and Preparing a Military Radiological Training Exercise
Myers, M.C.
Oregon State University, US Army

3:30 PM **WPM-E.3**
The Navy Radiological Affairs Support Program (RASP)
Cassata, J.
US Navy

4:00 PM **BREAK**

4:15 PM **WPM-E.4**
Roles and Issues of the Navy Radiation Health Offer in Navy Medicine
Selwyn, R.
US Navy

4:30 PM **WPM-E.5**
USMC Radiation Safety Program
Sorcic, J.
US Navy

6:00 - 8:00 PM **2D&E**

WPM-F: Aerosol Measurements Session

Chair: Morgan Cox

6:00 PM **WPM-F.1**
Latest Developments at the Waste Isolation Pilot Plant (WIPP) Site
Hayes, R.
Westinghouse Electric Corp

6:15 PM **WPM-F.2**
Development of a Compact ANSI N13.1 Compliant Aerosol Monitor for HEPA Carts
Desrosiers, A.
Safety and Ecology Corp

6:30 PM **WPM-F.3**
Chronology and Development of a Most Important Airborne Radioactivity Monitoring Standard- IEC 60761 (2002)
Cox, M.
Consultant

6:45 PM **WPM-F.4**
An Alpha Spectroscopy Alternative to the Tsivoglou, EC, and Kuznetz, HL, Method of Grab-Sampling
Baltz, D.
Bladewerx, LLC

7:00 PM **WPM-F.5**
The Use of Air Sampling Plans at the Savannah River Site
Hadlock, D.
Savannah River Site

7:15 PM **WPM-F.6**
Status of ANSI N42.50 for Radon Progeny Monitoring Instrumentation
Hayes, R.
Westinghouse Electric Corp

THURSDAY

7:00-8:00 AM

Ballroom A

CEL9 The Psychology of Radiation Safety – Simple Tools for Health Physicists
Ray Johnson

Dade Moeller & Associates

7:00-8:00 AM

Ballroom B

CEL10 US Ecology Low-Level Radioactive Waste Disposal Site - Its History, Operations and the Agony of Closure

Earl Fordham

Office of Radiation Protection, Washington State Department of Health

8:30 AM - Noon

Ballroom A

THAM-A: Environmental

Co-Chairs: *Wayne Gaul, Matthew Barnett*

8:30 AM

THAM-A.1

Details for Good Control Charts

Gaul, W.C.

Tidewater Environmental

8:45 AM

THAM-A.2

Spatial Variability of Uranium and Radium in Groundwater and Interwell versus Intrawell

Matthews, T., Kirk, M., Holzmer, J.

Waste Control Specialists LLC

9:00 AM

THAM-A.3

Assessment of the Relationship of Mass Loading to Self Absorption on Stack Sample Filters

Smith, B., Barnett, J., Ballinger, M.*

Gonzaga University, Pacific Northwest National Laboratory

9:15 AM

THAM-A.4

Residential Radon Exposure and Multiple Sclerosis: A Pilot Study

Neuberger, J., Nazir, N., Keighley, J., Lynch, S.

University of Kansas School of Medicine

9:30 AM

THAM-A.5

Review of Depleted Uranium Soil Contamination and Transport Studies from Fired Ammunition

Parkhurst, M., Cantrell, K.

Battelle, Pacific Northwest Division

9:45 AM

BREAK

10:15 AM

THAM-A.6

Experimental Techniques for Quantifying Foliar Interception and Translocation

Bytwerk, D., Higley, K.

Oregon State University

10:30 AM

THAM-A.7

Analysis of Simulated Radioactive Petroleum Waste Uptake in Radishes

*Al-Zahrani, A., Bytwerk, D., Higley, K., Napier, J.**

Oregon State University

10:45 AM

THAM-A.8

Transfer Factors for Contaminant Uptake by Tree Fruits

Napier, B., Fellows, R., Minc, L.

Pacific Northwest National Laboratory, Oregon State University

11:00 AM

THAM-A.9

Background Radioactivity in the Sediments of Some Rivers and Streams in Akoko, Southwestern, Nigeria and their Radiological Effects.

Ajayi, I.R

Adekunle Ajasin University, Nigeria

11:15 AM

THAM-A.10

Natural Radionuclides and Trace Metals in Thermal Spring, Al-Lith Region, Saudi Arabia

Khater, A., Hussein, M.

King Saud University

11:30 AM

THAM-A.11

Natural Radionuclides and Heavy Metals Partitioning during Water Treatment Processes including Reverse Osmosis

Khater, A.

King Saud University

11:45 AM

THAM-A.12

Distribution Pattern of NORM on Red Sea Shore Sediments in Relation to Non-Nuclear Industries

Khater, A.

King Saud University

8:30 AM - Noon

Ballroom B

THAM-B: Special Session: NCRP Report Review of Report No. 165 - Responding to a Radiological or Nuclear Terrorism Incident: A Guide for Decision Makers

Chair: Bill Rhodes

8:30 - 10:00 AM

Ballroom C

THAM-C: Special Session: Emerging Opportunities for the Interaction(s) of Nanotechnology and Radiation Protection

Co-Chairs: Lorraine Marceau-Day; Mark Hoover; Scott Walker

8:30 AM - Noon

2A

THAM-D: TBD

THAM-E: Military Health Physics*Chair: Greg Komp***8:30 AM**

The International Science and Politics of Depleted Uranium

*Melanson, M.**AFRRRI***THAM-E.1****8:45 AM**

Overview of the DOD Transmitted Electromagnetic Radiation Protection (TERP) Working Group

*Mikulski, H.T., Komp, G.R.***US Army***THAM-E.2****9:00 AM**

US Army Institute of Public Health - Health Physics Program

*Argo, W.**US Army***THAM-E.3****9:15 AM**

Using OSL Dosimeters to Evaluate Potential Doses to Individuals Screened by Whole-Body Security Screening Systems

*Jones, C., Szrom, F.**Army Institute of Public Health***THAM-E.4****JOB PLACEMENT INFORMATION**

Lets face it, everyone is looking for a job at one time or another. But during the Meeting, the job placement center might not be the best way to advertise your résumé, especially if your supervisor is attending the meeting. Also, not all members can make it to the meeting to post their résumé. Therefore, for those of you interested in seeking employment during the meeting, but not brave enough to post your résumé, this form is for you! You don't even have to be present at the meeting to participate.

Every attendee who is interested in seeking employment (and who doesn't want to take advantage of the prepared résumé form), is encouraged to bring his or her résumé to the Placement Center. If you are taking advantage of the prepared form, you should not also post your own résumé.

If you cannot make it to Palm Beach, Florida, you can still use either your résumé form or your personal résumé, and we will post it for you. Your résumé form should indicate that you are not at the meeting, so if a company is interested in you, they will call or email David Drupa (see contact information) and he will then contact you. If you are interested in the company, it will be up to you to contact the company. In addition to the résumé form, you can always place an advertisement in the Newsletter under the Health Physicists Seeking Employment section.

For a résumé form, contact:

David Drupa, HPS Headquarters

1313 Dolley Madison Blvd., Suite 402, McLean VA, 22101

Email: DDrupa@BurkInc.com

These forms must be sent no later than 31 May 2011. Once these forms are received, a résumé number will be issued and inserted on side one and two. By 7 June 2011, a résumé number will be assigned to all résumé forms and a photocopy of side two (with the résumé number) will be sent back to you. Please remember what résumé number has been assigned to you. A photocopy of side one will be posted at the meeting. The original résumé form will be kept in a book, strictly confidential, for six months after the meeting and then destroyed.

All completed résumé forms (side one) will be posted at the same time and will be up for the duration of the meeting. If an interested company wants more information, such as a more extensive résumé or an on-site interview, they will write a note on the message board in the placement center room. An example would be: "Résumé Numbers 12, 17 and 56 please leave your résumé at the Hotel front desk to the attention of D. A. Smith, XYZ Company," or "Company QRS would like to interview Résumé Numbers 19 and 23, please call J.D. Jones to set up appointment during meeting."

AAHP Courses

Saturday 25 June 2011 - 8 AM-5 PM

AAHP1 Simple Tools for Counseling Radiation Workers and the Public

Ray Johnson; Dade Moeller & Associates

Part I - Understanding the Basis for Upset and Fears

What is the greatest challenge in the course of your work in radiation safety – technical issues or people issues? For those of you that may answer the latter, this class will provide insights on how to better understand and be more successful with people issues. Are you stressed when confronted by emotional issues at work? Do you know how to provide a helpful response for an upset or fearful person, or would you rather avoid these people? Do you find yourself perplexed about people who are afraid of radiation? Thus, fear of radiation is a common denominator for everyone, although the extent of such fears appears to be related to technical understanding of radiation. Without special training in radiation safety most peoples' understanding is based on radiation mythology which is not supported by good science. Radiation fears are driven at a subconscious level often related to mythical beliefs and images of terrible consequences that may result from radiation exposure. Often people make assumptions about radiation effects without understanding that there are a series of steps for answering the question, "Is it safe?" Fears are always based on what we imagine and not on reality. The basis of what we imagine can be identified by asking the question "What's so bad about that?" By repeating this question we can move down through layers of images to the real motivation for upset and fear. When we understand what drives upset and fears, we can then offer the most helpful responses. Attendees should write down and bring to the class one or more specific scenarios where they would like to apply the insights from this class.

Part II - Tools for Effective Counseling and Risk Communication

Understanding the basis for worker upsets or fears can be helpful, but may not be enough without effective tools for risk communication. The most powerful tool for worker counseling is to hear, identify, and reflect their feelings (Active Listening). One of the reasons that worker upsets or fears escalate is because no one really hears them. Perhaps this should not be surprising because most health physicists are not trained to hear feelings. This class will show how this tool can be acquired and implemented in a short time. There are two keys to listening: 1) feelings are more important than what is said, and 2) listening is

more important than solving problems. We will explore whether our role in radiation safety is to be the "giver of answers" or to be a resource for assisting others in deriving their own answers. We will also consider a number of barriers to effective communication, including perceptions, images, feelings, resistance, values, social roles, decision preferences, and defensiveness. Insights on dealing with each of these barriers will be presented with applications to specific radiation scenarios provided by attendees. We will look at a sorting system for feelings and how to best respond to concerns and questions about radiation. This class will conclude with a list of things you can always say when you do not know what to say. We will practice these tools on communication scenarios which each attendee is invited to write down and bring with them.

AAHP2 Statistical Issues in Health Physics **Daniel J. Strom, Tom Johnson; Pacific Northwest National Laboratory, Colorado State University**

This class covers all the basics, and lead up to more advanced topics. It begins with a review of radiological quantities, and SI and traditional units. Next comes a definition of probability and probability distributions, followed by metrological and statistical terminology as outlined in the ISO Guide to the Expression of Uncertainty in Measurement (the "GUM"), including the concept of the measurand. MARSSIM & MARLAP terminology are introduced, including a discussion of what we measure and what we want to know. An explanation of variability, uncertainty, bias, error, and blunder follows, with presentations on classical (measurement) versus Berkson (grouping) errors in populations, shared versus unshared errors in populations, and autocorrelation within individuals over time. The dos and don'ts of presenting results are covered, including non-detects, censoring, and a discussion of who the audience is (management, public, scientists, or archives) and how that affects presentation of results.

Decision making under uncertainty requires answers to questions such as "Is anything there?" and "What can I promise to detect?" Model uncertainty is often overlooked, and is considered. The benefits of averaging and weighted averaging are presented. Statistical methods such as frequentist, maximum likelihood, and Bayesian methods are introduced, with a focus on the latter. Use and abuse of regression analysis is discussed. Managing uncertainty is presented, along with new methods developed at PNNL for making sense out of noisy, low-level data. Freeware web resources are used wherever possible.

AAHP3 Introduction to MARSAME

Richard Toohey, Alex Boerner; Oak Ridge Associated Universities

MARSAME is an acronym for “Multi-Agency Radiation Survey and Assessment of Materials and Equipment.” Published in January 2009, MARSAME was a joint effort between the DOE, DoD, EPA, and the NRC to aid sites in the clearance of materials and equipment (M&E). The MARSAME manual supplements the Multi-Agency Radiation Survey and Site Investigation Manual (“MARSSIM”).

To enhance the skill set of professionals in this topical area, the instructors will introduce several MARSAME technical topics, including (but not necessarily limited to!) Initial Assessments (IA), Measurement Quality Objectives (MQOs), Survey Approaches and Considerations, Survey Plans, and Survey Implementation Approaches and Considerations. Course presentations will be supported with examples, exercises, and problem sessions. The instructors will encourage and facilitate discussions addressing practical M&E property clearance issues.

At the conclusion of this course, participants will have acquired practical, technical information to begin applying the flexibility inherent in the MARSAME manual in support of M&E property clearance programs.

Prerequisites and Materials: Participants should have a familiarity with the MARSSIM methodology and basic statistical concepts. And.....Please bring a calculator with you!

Professional Enrichment Program (PEP)

Sunday 26 June through Wednesday 29 June

NEW NEW NEW

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.

The Professional Enrichment Program (PEP) provides a continuing education opportunity for those attending the Health Physics Society Annual Meeting. The two hours allotted each course ensure that the subjects can be discussed in greater depth than is possible in the shorter programs offered elsewhere in the meeting.

On Sunday 26 June, a series of 18 courses will be offered between 10:30 am - 4:00 pm.

In addition to the above-mentioned sessions for Sunday, six PEP lectures are scheduled on Monday - Wednesday afternoons from 12:15 - 2:15 pm. Registration for each two-hour course is \$90 and is limited to 60 attendees on a first-come, first-served basis. Those whose registrations are received before the preregistration deadline will be sent confirmation of their PEP course registration.

Students with a current ID card will be admitted free of charge to any sessions which still have space available after the waiting list has been admitted. Student admission will be on a first-come, first-served basis and will only begin 15 minutes after the start of the session to allow for completion of ticket processing.

Please Note!!

Please be on time for your sessions. The lecturer will begin promptly at the scheduled time. Please allow time for check-in. The HPS reserves the right to schedule a substitute speaker or cancel a session in case the scheduled speaker is unavailable.

Attendees not present at the starting time of the session cannot be guaranteed a space, as empty spaces will be filled from the wait list at that time. Spaces left after the wait list has been admitted may be filled with students. If your duties at the meeting cause you to be late for your lecture (e.g., chairing a session), contact the PEP registration desk so that your name can be placed on the waiver list and your space held.

Refund policy

Requests for PEP refunds will be honored if received in writing by 31 May. All refunds will be issued AFTER the meeting. Exceptions will be handled on a case by case basis.

Sunday - 8:00 - 10:00 am

PEP 1-A Technical Auditing for Health Physicists Jeffrey Guenther; HPS Laboratory Accreditation Policy Committee

The objective of this professional enrichment program topic is to provide a framework around which the participant can help customers (assesseees) improve through the process of technical assessment. Technical assessing requires an assessor to know what's important in an industry and where to help the assessee focus resources for optimization of the production process. The philosophy espoused during the training is that compliance and conformance form the bedrock from which a business can improve and optimize operations. The "why" is the most important part in helping the assessee understand the "how" of improvement. The process is presented around the Plan-Do-Study-Act model. Techniques will be presented to assist assessors communicate with the team, the customer, interviewees and the sponsoring organization. The presentation is general enough to apply to all health physics areas.

This course provides information to individuals interested in the HPS accreditation program, and is also part of a course for certifying individuals to assess laboratories for HPS accreditation.

PEP 1-B EH&S "Boot Camp" for Radiation Safety Professionals: Part 1 - "The Basics of Risk Management & Insurance" and "The Basics of Fire & Life Safety" Robert Emery, Janet Gutierrez; University of Texas Health Science Center at Houston

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:

The risk management & insurance portion of the session will address the issues of retained 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

PEP 1-C Accelerator Physics for ES&H Professionals Part 1

J. Donald Cossairt; Fermi National Accelerator Laboratory

This is Part 1 of a two-part PEP Course. The participants will maximize the benefits of their participation by attending both Parts. The acceleration and transport of particle beams constitutes a fascinating subject that merits understanding by accelerator health physicists and other environment, safety, and health professionals. Particle accelerators continue to grow in importance of course in medicine but also in many other areas that now reach deeply into many facets of everyday life. Members of the public now commonly encounter man-made radiation from accelerators. The goal of this course is to improve the ES&H professional's knowledge of accelerator physics and its connection with unique radiation protection and other hazards. This should lead to more effective working relationships with those responsible for accelerator operation in common efforts to address important ES&H issues. In Part 1 of this course basic electromagnetic theory, relativistic relationships, charged particle optics, and electrostatic accelerators will be reviewed along with their association with unique hazards. While equations will be used, the presentation will be semi-qualitative in nature. Attendance at Part 1 is nearly essential to effective participation in Part 2.

*(Operated by Fermi Research Alliance, LLC under Contract No. DE-AC02-07CH11359 with the United States Department of Energy.)

PEP 1-D Operational Accelerator Health Physics I ***L. Scott Walker, Robert May; Los Alamos National Laboratory, Thomas Jefferson National Accelerator Facility***

The Operational Accelerator Health Physics I class covers an overview of medium and high energy

accelerators, electron accelerators configuration, electron accelerator radiation production, electron accelerator shielding, electron accelerator radioactive material production, and electron accelerator environmental impacts. The class then begins to focus on proton accelerator configuration, proton accelerator radiation production, accelerator produced isotopes, accelerator interlock systems, general health physics practices at accelerators, general accelerator health physics rules of thumb, high energy radiation physics for the health physicist, and useful references.

PEP 1-E Status of ANSI N42 Standards for Health Physics Instrumentation

Morgan Cox, Co-chair ANSI N42.RPI

This report covers the current status of American National Standards Institute (ANSI) N42 standards for health physics instrumentation.

This presentation includes the discussion of some eighteen ANSI N42 standards for Radiation Protection Instrumentation (RPI) in effect, being revised or being combined, including those for performance requirements for portable radiation detectors; ANSI N42.17A for normal environmental conditions and ANSI N42.17C for extreme environmental conditions; ANSI N42.323A and B being combined for calibration of portable instruments over the entire range of concern, i.e., in the normal range and for near background measurements; performance criteria for alarming personnel monitors in ANSI N42.20; airborne radioactivity monitors in ANSI N42.30 for tritium, ANSI N42.17B for workplace airborne monitoring, ANSI N42.18 for effluent, airborne and liquid monitoring on site, and ANSI N323C for test and calibration of airborne radioactive monitoring; instrument communication protocols in ANSI N42.36; in-plant plutonium monitoring in ANSI N317; reactor emergency monitoring in ANSI N320; carbon fiber personnel dosimeters in ANSI N322; installed radiation detectors in ANSI N323D; ANSI N42.26 for personnel warning devices; radon progeny monitoring in ANSI N42.50; and radon monitoring in ANSI N42.51.

The new ANSI N42.54 standard is intended to combine the salient materials in 42.17B, 42.18, 323C and 42.30, with a comprehensive title of "Instrumentation and systems for monitoring airborne radioactivity."

Audience participation is important to the success of this presentation.

PEP 1-F Using the RESRAD Family of Codes to Develop Cleanup Criteria and Dose Estimates

Tom Hansen, Delis Maldonado; Ameriphysics, LLC, Oak Ridge Associated Universities

The RESRAD family of computer modeling codes are used to estimate radiation doses and risks from residual radioactive materials. RESRAD was developed by Argonne National Laboratory (ANL); code and

version control are currently maintained by the Department of Energy (DOE) through ANL. These codes are available free for download and, as a result, are likely the most extensively used and tested dose modeling codes in the world.

Three codes will be discussed and demonstrated. RESRAD and RESRAD-OFFSITE are used for assessing radiation dose and risk from soil containing residual radioactive material; RESRAD-BUILD provides a means for analyzing the radiological doses resulting from occupancy of buildings contaminated with radioactive material.

This course will contain an overview of the codes, but will consist primarily of real-time demonstrations using the codes to 1) translate dose-based release (cleanup) criteria into measureable, derived concentration guideline levels and 2) perform post-cleanup dose estimates. A variety of scenarios typically encountered by the presenters will be examined.

An overview of the tools for sensitivity and uncertainty analyses is provided, as are demonstrations using these tools.

Sunday - 10:30 am - 12:30 pm

PEP 2-A HPS Laboratory Accreditation Program Assessor Training

Jeff Guenther; HPS Laboratory Accreditation Policy Committee

The objective of this professional enrichment program topic is to familiarize HPS Laboratory Accreditation Program technical assessors and others with the requirements of the assessment program. The training will describe the program documentation, incorporated elements of ISO/IEC 17025, the accreditation process, and will specifically address technical requirements for instrument calibration and source manufacturing laboratories. The training is required for all members of the HPS Laboratory Accreditation Assessment Committee and is recommended for facilities interested in accreditation. The HPS program is similar to other ISO/IEC 17025 based accreditation programs and the training will be useful for anyone interested in the accreditation process. The program will also provide an opportunity for the student to practice identification of non-compliant items.

This course provides information to individuals interested in the HPS accreditation program, and is also part of a course for certifying individuals to assess laboratories for HPS accreditation

PEP 2-B EH&S “Boot Camp” for Radiation Safety Professionals: Part 2 - “Security 101 for Radiation Safety Professionals” and “The Basics of Biological & Chemical Safety”

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

See PEP 1-B for details.

PEP 2-C Accelerator Physics for ES&H Professionals Part 2

J. Donald Cossairt; Fermi National Accelerator Laboratory

This is Part 2 of a two-part PEP Course and will be most beneficial if preceded by participation in Part 1. The acceleration and transport of particle beams constitutes a fascinating subject that merits understanding by accelerator health physicists and other environment, safety, and health professionals. Particle accelerators continue to grow in importance of course in medicine but also in many other areas that now reach deeply into many facets of everyday life. Members of the public now commonly encounter man-made radiation from accelerators. The goal of this course is to improve the ES&H professional’s knowledge of accelerator physics and its connection with unique radiation protection and other hazards. This should lead to more effective working relationships with those responsible for accelerator operation in common efforts to address important ES&H issues. Building upon the foundation of Part 1, particle acceleration using radio-frequency electromagnetic waves will be covered beginning with linear accelerators and radio-frequency quadrupoles (RFQs). Circular machines such as cyclotrons, betatrons, synchrotrons, and high energy colliding beam accelerators will complete the presentation. While equations will be used, the presentation will be semi-qualitative in nature.

*(Operated by Fermi Research Alliance, LLC under Contract No. DE-AC02-07CH11359 with the United States Department of Energy.)

PEP 2-D Nanotechnology: What’s All the Fuss About?

Lorraine Marceau-Day; Louisiana State University

This PEP will introduce the participant to the unique properties of Nanoparticles and Nanotechnology. It will describe the novel characteristics of nanoparticles and how they differ from their bulk counterparts. Emphasis will be concentrated on the myriad applications of nanotechnology, the potential risks and hazards of engineered nanoparticles. As with any emerging technology, the responsible parties must assure that risk/benefit ratios remain in line with those developed for other technologies. Health Physicists have experience in determining risk. Unfortunately, issues such as safety, concentration and limits are frequently

addressed only after a new material has been shown to be harmful after its release into common use. Two classical examples are asbestos and the wide-spread use of X-rays by physicians without protection at the beginning of the last century. Nanoparticles are similar to radiation in that you can't see [at least not individually], taste, feel or touch them. The ability to create accurate and repeatable measurements at the nanoscale level is critical to researchers and engineers who seek to develop the next generation of materials. The nature of nanotech materials requires some novel testing techniques. The atomic and molecular dimensions of these materials, means that quantum mechanics comes into play. Especially at the nano-level, there is the potential for multiple measurement errors, including but not limited to, leakage currents, grounding and shielding, noise, background, settling time and extraneous current. Measurements are also required to uncover the characteristics unique to nanoscale structures. Nanomaterials differ from their bulk counterparts in both chemical and electronic signatures. This PEP is aimed at individuals who would like to understand more about nanotechnology and how it might influence their daily work activities as a Health Physics professional.

PEP 2-E Status of ANSI N42 Standards for Health Physics Instrumentation
Morgan Cox, Co-chair ANSI N42.HSI

This report covers the current status of American National Standards Institute (ANSI) N42 standards for health physics instrumentation.

This presentation includes the discussion of nineteen ANSI N42 standards recently developed or being developed, or not yet completed, for performance requirements and testing requirements for Homeland Security Instrumentation (HSI), including those for personal radiation detectors in ANSI N42.32; portable radiation detectors in ANSI N42.33; portable detection and identification of radionuclides in ANSI N42.34; all types of portal radiation monitors in ANSI N42.35; for training requirements for homeland security personnel in ANSI N42.37; spectroscopy-based portal monitors in ANSI N42.38; performance criteria for neutron detectors in ANSI N42.39; neutron detectors for detection of contraband in ANSI N42.40; active interrogation systems in ANSI N42.41; data formatting in ANSI N42.42; mobile portal monitors in ANSI N42.43; checkpoint calibration of image-screening systems in ANSI N42.44; criteria for evaluating x-ray computer tomography security screening in ANSI N42.45; performance of imaging x-ray and gamma ray systems for cargo and vehicles in ANSI N42.46; measuring the imaging performance of x-ray and gamma ray systems for security screening of humans in ANSI N42.47; spectroscopic

personal detectors in ANSI N42.48; personal emergency radiation detectors (PERDs) in ANSI N42.49A for alarming detectors and in ANSI N42.49B for non-alarming detectors; and backpack-based radiation detection systems used for Homeland Security in ANSI N42.53.

Audience participation is important to the success of this presentation.

PEP 2-F An Introduction to the Project Management Professional Certification for Health Physicists
Tom Hansen, Art Palmer; Ameriphysics, LLC, EnergySolutions

The halo effect is a cognitive bias whereby the perception of one trait (i.e. a characteristic of a person) is influenced by the perception of another trait (or traits) of that person. As a health physicist, you likely stand out from the crowd in terms of intelligence, initiative, and integrity. Due to the halo effect, you may find yourself promoted to a management position – perceived as an excellent manager - even though you've had no formal management training. So where does a health-physicist go to get the management training necessary to be a successful manager? Pursuing an MBA is one option, but that can be a costly, time consuming route, and an MBA is not for everyone. Another reasonable approach may be the Project Management Professional (PMP) credential, which recognizes competence in leading and directing project teams.

This course will provide attendees an introduction to the Project Management Institute's (PMI) process framework upon which the PMP credential is tested. This framework is comprised of forty-four project management processes that are organized into nine knowledge areas and five foundational process groups: initiating, planning, executing, monitoring and controlling, and closing.

Topics will include scope control, the triple constraint, time management and critical path analysis, cost estimating and earned value management, contracting mechanisms, risk assessment, and a review of typical PMP examination questions and answers.

This course is co-presented by CHP/PMPs who are currently executive-level managers and possess more than forty years combined health-physics project management experience.

PEP 3-A Introduction to Uncertainty Calculation
Daniel Van Dalsem, James Tarzia; Eckert & Ziegler Isotope Products, Radiation Safety & Control Services

An important element in the activities of health physicists who are responsible for the safety of personnel and the general public is the measurement of radiation from various sources, including reactors, radiation-generating machines and radioactive sources used in industry and in the medical diagnosis and treatment of patients. To be meaningful, these measurements must be made using instruments and sources that are not only traceable to a national standards laboratory (e.g., NIST) but also must be performed by competent personnel using appropriate technical standards and procedures designed to ensure the calibration results meet required uncertainty.

The definition of traceability that has achieved global acceptance in the metrology community is contained in the International Vocabulary of Basic and General Terms in Metrology (VIM; 1993):

“...the property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons, all having stated uncertainties.”

Because of the importance of uncertainty calculations in Laboratory Accreditation this course will concentrate on the corresponding technical issues involving laboratory quality assurance, the estimation of uncertainty, and limits of detection. Internationally recognized standards from ISO GUM and their NIST counterparts will be explained using examples. Software developed for implementing these standards will be demonstrated.

PEP 3-B EH&S “Boot Camp” for Radiation Safety Professionals: Part 3 - “Measuring and Displaying Radiation Protection Program Metrics That Matter to Management.”

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

See PEP 1-B for details.

PEP 3-C Training First Responders on Radiological Dispersal Devices (RDDs) and Improvised Nuclear Devices (INDs) Incidents

K.L. “Ken” Groves; S2-Sevorg Services, LLC

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.

KEYWORDS: First Responders, RDDs, INDs, Training

PEP 3-D Operational Accelerator Health Physics II

L. Scott Walker, Robert May; Los Alamos National Laboratory, Thomas Jefferson National Accelerator Facility

See PEP 1-D for details.

PEP 3-E Health Physics/Nanotechnology Interactions

Lorraine Marceau-Day; Louisiana State University

Once one has acquired a fundamental understanding of Nanotechnology [see PEP 2-D entitled Nanotechnology: What’s all the Fuss About?]; it is time to understand how radiation protection and nanotechnology may be interconnected. Since nanotechnology is now part of mainstream science, and since it represents a paradigm shift in many aspects of science, technology and safety, future educational goals of Health Physics Professionals as well as future academic curricula for HP students should include the study and understanding of transport phenomena, dosimetry, and implementation of suitable practices

for the safe handling of radioactive nanoparticles. As the radiation protection professional, it will also fall to the Health Physicist to assist in helping to formulate new standards of radiation protection practices to deal with this technology. Whether you work with accelerators or in decommissioning, you will be exposed to this new technology and its interactions within the profession of health physics. From joint radiation and nanoparticulates cancer therapy to military and homeland security applications, you will see and maybe even use nanotechnology. This PEP will focus on nanotechnology-based radiation detectors, regulatory issues, risk assessment strategies, decommissioning, military, medical health physics and accelerator related interactions of Nanotechnology for the radiation protection professional.

PEP 3-F Going Public: Case Study of a 238Pu Contamination Spread to the Public Domain

Robert Jones, Pacific Northwest National Laboratory

In June, 2007, a 238Pu source was discovered to be leaking, spreading contamination in two buildings and staff members' cars. Contamination spread was also possible in public areas. This event challenged several aspects of the Radiation Protection Program including contamination response, internal dosimetry scenarios, regulatory interpretation, and media, public and worker relations. How the event was managed and improvements to the Radiation Protection Program will be discussed. Internal dosimetry considerations for immediate staff, ancillary staff, and members of the public will also be discussed.

Monday - 12:15 - 2:15 pm

PEP M-1 Part II Accelerator Health Physics ABHP Exam Problems

L. Scott Walker; Los Alamos National Laboratory

Health Physics examinees normally stay away from Accelerator Health Physics problems on the ABHP Part II exam. For some reason accelerator health physics is seen as an obtuse field for most personnel who take the exam. With some basic knowledge, most Part II accelerator based problems are not that difficult. More complex problems take computer assistance and usually involve more than an hour of effort. Thus, ABHP Part II accelerator based exam problems are normally straight forward. The ABHP Part II problems PEP class will focus on simple problems necessary to support the operation of an accelerator and solving those problems given on the exam. Those completing this class will be provided with the necessary background to process these problems in a straight forward manner. This class will include prob-

lems at both proton and electron accelerators and includes high energy physics issues that impact health physics management and are associated with accelerator operation.

PEP M-2 Medical Internal Dose Calculations – A New Generation Arrives

Michael Stabin; Vanderbilt University

Traditional mathematical model-based anatomical models have been replaced with more realistic standardized anatomical models based on patient image data. Other recent model changes that will affect standardized dose estimates for radiopharmaceuticals include replacement of the traditional ICRP 30 GI tract model with the ICRP human alimentary tract (HAT) model and use of updated tissue weighting factors for calculation of effective dose. Calculation of internal dose estimates from animal or human data sets requires knowledge of a number of important principles and relationships in kinetic analysis and dose assessment, and knowledgeable use of available software tools. Adjustments to traditional dose calculations based on patient-specific measurements are routinely needed, especially in therapy calculations, for marrow activity (based on measured blood parameters), organ mass (based on volumes measured by ultrasound or Computed Tomography (CT)), and other variables. This program will give an overview of standard calculation techniques and models, and demonstrate how new models have introduced changes to standard calculations, with practical examples worked out in several important areas of application. A brief discussion will be included of current issues in radiation biology that are pertinent to the interpretation of calculated dose estimates.

PEP M-3 Fundamentals of Gamma Spectroscopy – Part I

Doug Van Cleef; ORTEC/Advanced Measurement Technology, Inc.

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.

Objective: Upon completion of this course, student will have a working knowledge of radioactive decay schemes, radiation emissions, gamma radiation detection, and the principles of the laboratory gamma spectroscopy process.

PEP M-4 Role of the Health Physicist in Radiation Accident Management

Richard Toohey, REAC/TS, Oak Ridge Associated Universities

As an emergency response asset of the Department of Energy, the Radiation Emergency Assistance Center/Training Site (REAC/TS) is charged with providing support, advice, and training on the medical management of radiation accident victims. When a radiation accident occurs, close coordination is required between medical and health physics personnel; however, unless extraction of a victim from a very high radiation field is required, medical care always takes priority over radiological considerations. Health physicists must be familiar not only with the application of radiation protection principles to accident management, but also with medical terminology and procedures, and both on-scene and in-hospital emergency medical care. Challenges include interaction with medical personnel, dose assessment, public information, and post-accident interactions with managers and investigators, and possibly attorneys. Medical personnel must be taught basic radiological terminology, the difference between irradiation and contamination, radiological triage, contamination control procedures during evacuation and treatment, methods for patient decontamination, possible therapies (e.g., administration of DTPA), waste management, and preservation of evidence. Dose estimation includes radionuclide identification; intake estimation; deep, shallow and lens dose measurement or estimation; accident reconstruction; and use of opportunistic dosimeters and/or biological dosimetry. Public information concerns include patient privacy, release of facts vs. assumptions, determinations of the effectiveness of plans and procedures, and transmitting technical information to a lay audience. Post-accident interactions include refinements or revisions of dose estimates, stochastic risk estimates, review of operations, review of emergency plans and procedures, and development of lessons learned, as well as potential involvement in litigation. Some actual experiences in radiation accident management will be used to illustrate these points.

PEP M-5 The Basics of Magnetic Resonance Imaging and Spectroscopy

Amir Huda; California State University

Health Physicists and other personnel working in the world of ionizing radiation are often asked about Magnetic Resonance Imaging (MRI) and the lesser known Magnetic Resonance Spectroscopy (MRS) procedures and whether they are safer than the other competing modalities of imaging. The actual functionality of these devices, quite often remains a “black box” for many health physicists. This program will ex-

plain in detail the use of radio waves, magnetic fields, and gradients to generate an image and also look at cerebral metabolites in the brain. The use of animation and slides from various sources will make the topic comprehensible without a detailed background in quantum mechanics. The workshop will cover the history, current status, and future of various off-shoots of the field including functional MRI (fMRI), diffusion-weighted or diffusion-tensor imaging (DWI/DTI), etc. It will also give a flavor of safety issues dealing with these devices and a brief overview of accidents involving some of the MR scanners.

The speaker has been in the field for over 20 years doing research in MRS and teaching the subject for the last 11 years. He is a member of the American Board of Health Physics.

PEP M-6 Updates on Laser & Optical Radiation Safety Standards

D.H. Sliney; Consulting Medical Physicist (US Army Medical Department—retired)

Over the past two years, there have been several key developments in our understanding of the biological threshold data of optical radiation—particularly with regard to short-pulse laser radiation. Limits for nanosecond lasers will be reduced, but limits for picoseconds lasers will actually increase. Several groups are currently revising their guidelines for human exposure. While lasers are addressed in detailed ANSI Z136 standards, conventional sources of optical radiation are dealt with by other sets of limits and lamp safety standards. During the past 40 years a wide body of biomedical research has been conducted to understand the factors which influence injury to optical radiation—particularly with respect to the eye. A primary motivation for much of this research initially had been the advent of lasers, since focal damage of the retina from a collimated beam exposure is possible at some distance. However, a wider range of research studies also provided the basis for establishing human exposure limits for ultraviolet and infrared radiation as well as for intense visible light. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has published guidelines for human exposure, and these are freely available from the ICNIRP website (<http://www.icnirp.org>); however, these are now being revised. These revised guidelines are generally in agreement with the recently revised threshold limit values (TLVs) of the American Conference of Governmental Industrial Hygienists (ACGIH). While there are some similarities with laser Maximum Permissible Exposure (MPE) limits, the default values and some safety factors differ for the incoherent limits. Accidents and injuries from lamps are more frequent but less severe than from lasers. Many a practicing

health physicist will occasionally be asked about the safety of an intense lamp, a laser, the sun or an open arc—and today—even questions about the safety of light-emitting diodes are posed.

With respect to ultraviolet and infrared radiation, as from arc welding, indoor workers can be readily protected. However, outdoor workers are chronically exposed to ultraviolet radiation from sunlight and protection of the eyes and skin for outdoor workers poses significant challenges for the health physicist and other occupational health specialists. Although IARC classifies sunlight as a Group I carcinogen, it is nearly impossible to protect to currently recommended ICNIRP exposure guidelines for the skin during summer months. There are no new revisions of the ICNIRP or ACGIH limits for ultraviolet radiation. The ICNIRP and a number of organizations provide ultraviolet safety guidelines for worker protection and education. A simple, but effective method for the worker to know when protection is important is known as the “Shadow Rule,” which indicates that high risk exists only with a short shadow: “Short-shadow, seek shade.”

While some knowledge of optical, radiofrequency, ELF, and static electromagnetic field characteristics may be helpful, both experienced and novice health physicists with NIR safety interests or responsibilities will benefit from this course.

Tuesday - 12:15 - 2:15 pm

PEP T-1 A Decision Tool for Population Screening and Protection in Response to Radiological Events

Eva K. Lee; Georgia Institute of Technology

Population monitoring is a process that begins soon after a radiation incident is reported and continues until all potentially affected people have been monitored and evaluated for: 1) needed medical treatment, 2) the presence of radioactive contamination on the body or clothing, 3) the intake of radioactive materials into the body, 4) the removal of external or internal contamination (decontamination), 5) the radiation dose received and the immediate health risk from the exposure, and 6) long-term health effects. Population monitoring (including people and their pets) is accomplished locally and is the responsibility of state, local, and tribal governments.

The challenges of population monitoring especially in the first few days after a radiation incident are daunting. They are compounded by the fact that many critical components of monitoring should be put in place in the first few hours, before the arrival of federal assets that might be used to assist in the monitoring efforts. In this talk, we will discuss practical considerations for operating a community reception center, and

a decision-support software system that can be used for optimizing design of community reception centers, building on the established infrastructure and planning of state and local public health departments throughout the country. The system allows the determination of appropriate layout of screening centers, estimates and optimizes the necessary staffing needs, and provides insight on process flows and optimal throughput that the operations can support. It optimizes the operations efficiency and throughput under limited resources (labor and time). And it allows users to analyze the risks of radiation contamination spread and determine mitigation strategies. This work is joint with CDC NCEH/EHHE/Radiation Studies Branch Dr. Armin Ansari and Kevin Casper.

PEP T-2 So Now You're the RSO: Elements of an Effective Radiation Safety Program

Thomas L. Morgan, Columbia University

Designation as a Radiation Safety Officer brings with it unique opportunities and challenges. The author will offer insights on how to manage a radiation safety program from his 16 years experience as a RSO at medical, university, and industrial facilities. Regardless of the type of facility, number of radiation workers, or scope, an effective radiation safety program must be driven from the top down. Senior management must embrace the goals of the program. The RSO must have the trust of senior management as well as a good working relationship with line managers and workers. These relationships are built on the integrity, knowledge, experience, and accessibility of the RSO. This talk will focus on the role of the RSO in achieving and maintaining an effective program.

PEP T-3 Fundamentals of Gamma Spectroscopy – Part II

Doug Van Cleef; ORTEC/Advanced Measurement Technology, Inc.

See PEP M-3 for description.

PEP T-4 Skin Dose, Effects and Experiences in Fluoroscopy

Chris Martel; Brigham and Women's Hospital, Harvard Medical School

Recent media attention has focused on patient injuries from radiation generating devices such as brain perfusion studies using CT scanners, cancer treatment using linear accelerators, and interventional procedures using fluoroscopy devices. As a result, hospitals are seeking to manage patient radiation doses more closely than ever. In many states, institutions are required to monitor fluoroscopy dose to patients, and follow up is required for patients likely receive a skin injury. Patient doses exceeding the deterministic threshold for skin injury (i.e., 2 Gray) are a common

occurrence. However, skin injuries such as erythema are rarely seen. Is the deterministic threshold for skin injury really 2 Gray? This course will examine the structure of skin, historical and current evidence of radiation interaction and damage to skin, and measurement of skin dose. The course will explore whether 2 Gray is an appropriate threshold for skin injury or is simply too low.

PEP T-5 Legal Considerations for Radiation Risk and Dose Reconstruction used in Compensation Program Decisions and Civil Litigation

Lynn McKay, Ralph Johnson; Johnson & McKay, PLLC

This course will acquaint health physicists with current attempts to use radiation dose and risk calculations performed for compensation programs such as EEOICPA in personal injury civil litigation. The course will examine the reasons why the EEOICPA requires use of certain assumptions in assessing radiation dose and risk to those who apply for compensation pursuant to this program. Course participants will gain an understanding of applicable burdens of proof and evidentiary standards in dose and risk calculations to prove negligence and causation in state and federal court litigation. The course will compare methods used in dose and risk assessments performed for compensation programs such as EEOICPA with those used in civil litigation to establish that a claimant's radiation dose is an actual and proximate cause of his or her cancer.

PEP T-6 Use of Portable Survey Meters and Portal Monitors for Radiological Triage

Nolan Hertel, Wesley Bolch; Georgia Institute of Technology, University of Florida

After a radiological event, such as a radiological dispersion device, improvised nuclear device, or a nuclear reactor accident, there could be large numbers of potentially contaminated individuals. Although the decontamination of externally contaminated individuals is rather straightforward, the screening of persons for internal contamination requires an analysis of the level of radioactive material incorporated in the body. If the level for an individual is sufficiently high based on the count rates obtained with the screening instrument, such that the committed effective dose will likely exceed a clinical decision guideline, the individual will be sent for further evaluation and possibly decorporation treatment. The initial screening can be performed with a variety of handheld detectors or portal monitors and represents the first-cut at identifying persons whose internal committed dose equivalent may be of concern. The presentation will review work performed for the CDC Radiation Studies Branch by the University of Florida and Georgia Tech to obtain the count

rates from various instruments which would indicate a level of internal contamination of concern. Computer simulations were employed to determine the internal distribution of the isotopes considered in the body and then compute the count rates that would be observed using different sized phantoms to represent the human body. Procedure sheets on the use of the instruments as well as the count rate thresholds of concern for up to 30 days after the intake will be presented. In addition, software developed at the University of Florida that can be used in the field to assist in performing the initial triage will be covered.

Wednesday - 12:15 - 2:15 pm

PEP W-1 An Overview of Ionizing Radiation Carcinogenesis

Otto G. Raabe; University of California, Davis

Excessive exposure to ionizing radiation may lead to the development of cancer by promotion of ongoing carcinogenic biological processes or by independent cancer induction. Radiation induced cancer is a complex and not completely understood process involving multiple events including but not limited to cellular DNA damage, up and down regulation of genes, intercellular communication, tissue and organ responses, clonal expansion of altered cell lines, and possibly eventual malignancy. The current understanding of radiation carcinogenesis is informed by epidemiological studies of human populations exposed to elevated levels of ionizing radiation and controlled studies utilizing laboratory animals. Studies of the atomic bomb survivors indicate a linear no-threshold dose-response relationship. Studies of the radium dial painters and internal emitter studies in animals have displayed threshold relationships. This review of the major studies provides perspective and suggestions for understanding these seemingly diverse cancer risk phenomena. The conclusions have important implications with respect to ionizing radiation safety standards.

PEP W-2 NUCL5470G Nuclear Forensic Analysis *Ed Waller; University of Ontario Institute of Technology*

This PEP will consider elements of nuclear forensic analysis as related to nuclear security, current threats, analytical techniques, nuclear weapons and attribution and forensic dosimetry. There are many techniques available to forensic investigators to investigate suspect criminal activity. In addition, there are many times when forensic techniques are required to investigate nuclear-related events. This course will explore nuclear and chemical techniques related to the nuclear forensics. Both radiation and analytical chemistry techniques will be introduced. Risks and hazards

associated with nuclear forensic investigations will be reviewed, and mitigation strategies developed. Data integrity and communication of results will be emphasized.

PEP W-3 Nanoparticle Characterization and Control Fundamentals: A Graded Approach

Mark D. Hoover; Centers for Disease Control and Prevention

Given the considerable current interest in characterizing and controlling risks to worker health from potential exposures to engineered nanoparticles, this course will present a graded approach to sampling, characterization, and control of nanoparticles in the workplace. The graded approach begins with process knowledge, particle counting, and microscopy assessments for level 1 for initial screening; a level 2 for comprehensive characterization of detailed composition, size, concentration, and biophysical property assessments; and (ideally) an economical and efficient level 3 routine monitoring and control step involving a necessary and sufficient subset of level 1 and 2 methods for the material and situation of interest. The graded approach enables appropriate selection of handling and containment practices to match material properties and amounts. Sampling by filtration is an especially important method for collecting and evaluating any type of airborne material, including nanoparticles and other ultrafine aerosols such as radon decay products. Fundamentals will be presented for inertia (efficient collection for large particles) and diffusion (efficient collection for very small particles) that affect the efficiency and most penetrating particle size (MPPS) of filters; efficiency and MPPS for the various filter types that can be used for collection of nanoparticles; and issues for selection of filters with appropriate collection efficiency, MPPS, durability, pressure drop, and surface characteristics. Examples and nanoinformatics safety and health resources are provided.

PEP W-4 OSL Applied Concepts Training

Chris Passmore; Landauer, Inc

Bench top InLight and microStar analytical systems were designed for personal dosimetry and as a tool for assessing patient dose using optical stimulated luminescence (OSL) techniques. InLight and microStar systems were designed to bring OSL technology to laboratories wanting to perform their own personnel dosimetry or hospitals for assessing patient dose using the microStar reader and nanoDot dosimeter. These systems allow OSL measurements to be made with very little depletion of signal from the radiation dosimeter. OSL leads to many fundamental shifts in patient monitoring and external dosimetry paradigm. In this course, students will explore fundamental properties of OSL and how these concepts can change the

way health and medical physicist approach radiation dosimetry. The training will be a mixture of lecture and laboratory with a heavy focus on applied concepts. Health and Medical Physicists will perform hands on testing of OSL properties including re-readability, annealing, and depletion. In addition, health and medical physicists will perform reader intercomparison testing and study OSL radiation response matrix to determine the radiation field used to dose the dosimeter.

PEP W-5 New CT Dose Phantom: Motivation and Discussion

Donovan Bakalyar; Henry Ford Hospital

Over the past several years the now universally utilized CT dose indices, CTDIvol and DLP, have come under close scrutiny, motivated in large part by the advent of cone beam and very wide fan beam CT machines. This led to the formation of AAPM Task Group 111 (TG111) which thoroughly examined the CTDI family of dose indices and having done so, formulated a set of recommendations which were included in their report. AAPM Task Group 200 (TG200) has been created to implement these recommendations and as a result a phantom has been designed, built and tested that will address some of the limitations of the current dose index system. In addition, methods of measurement and options for assurance of performance are being developed with an eye toward fealty toward sound physical concepts as well as practical means for the performance and analysis of these measurements. In light of some of the confusion regarding the current CTDI indices, a further objective is to clearly distinguish phantom dose measurements from patient dose estimates. This talk will introduce and discuss several new suggested indices.

PEP W-6 Fluoroscopic Safety Management System

Ray Dielman; St Anthony's Medical System

St Anthony's Health Care is a typical acute general hospital, and satellite facilities, with an active and growing use of fluoroscopy and other imaging modalities. The regulatory and risk culture, growing use, users, patient and team member doses mandated a safety management system. The Joint Commission established a sentinel event category - radiation overdose - in 2005 requiring proactivity on the part of accredited institutions using fluoroscopy (and therapy). St Anthony's created and adopted a two part system to address the issue. Part one - safety -- is underway; part two - credentialing - is being tested. The system parameters and results to date will be presented.

Continuing Education Lectures (CEL)

Monday 27 June through Thursday 30 June

Monday

7:00-8:00 AM

CEL1 Nanoparticle-Based Radiation Detectors and the Use of Radiation for Nanoparticle Detection

M.L. Marceau-Day, L. Madsen; Center for Advanced Microstructures and Devices, Audubon Sugar Institute, Louisiana State University, Baton Rouge

There is a continual need for cheap, reliable and sensitive radiation detectors. In particular, new and specific detectors are sought for homeland security applications. Such detectors need to be able to distinguish potentially hazardous materials from background radiation. In order to improve the operational range of such hardware, the new generation of detectors should also be small, discrete, self-powered, easily transported and easily installed. These new detectors rely on new materials including composite and intercalated polymeric scintillators which are designed to take advantage of the unique properties of nanoparticles. Since these new detectors will demonstrate improved specificity, they will readily find wide-spread application and use in the national security sector. The unique properties of nanomaterials can also be used to generate spectrometric data that can easily differentiate fissile materials from medical or industrial use radio-isotopes, as a consequence of their unique spectrographic signatures. The techniques used to detect radiation are usually exclusive to those used to characterize nanoparticulates. However, we will discuss the potential of nanocharacterization using radiation (the converse) wherein, radiation may be used to detect the size of nanoparticles. These two divergent applications of detection for both radiation and nanoparticles inextricably tie these two technologies together. This talk will focus on some of the state-of-the-art of these emerging technologies.

CEL2 Integration of Radiation Safety into Environmental Health and Safety: The Columbia Experience

Thomas L. Morgan, Kathleen Crowley, Environmental Health and Safety, Columbia University

Columbia University's Environmental Health and Safety and Radiation Safety programs have been separate and distinct entities. Collectively, these programs are responsible for five campuses, two independent hospitals and a state-sponsored research institute spread across three counties. To achieve better coordination of activities, more efficient use of resources, and consistency in procedures, a decision was made over time, to merge all programs in to one department. An innovative model for operations has been

adopted. For example, individuals known as research safety specialists conduct routine laboratory surveys for biological and chemical safety as well as radiation safety. Also, one program handles all hazardous material wastes, including radioactive waste. This talk will discuss some of the challenges and successes of this integration.

CEL3 Laser Safety Program Development at an Academic Medical Center

Deirdre Elder; University of Colorado Hospital

Laser safety is an important, but often overlooked issue in medical settings. The primary reason for developing an effective laser safety program is to provide a safe environment for patients and staff. Other compelling reasons include preventing large fines under the OSHA general duty clause for failing to maintain a safe work environment and preventing or minimizing malpractice litigation. In addition, The Joint Commission reviews the structure of medical laser safety programs for compliance with ANSI standards. Unfortunately, in many medical facilities, the laser safety program is assigned to a nurse or another individual with many competing priorities and narrow focus. This may work in smaller facilities with laser use confined to one location. In large medical centers with laser use spread over multiple locations, a more extensive laser safety program is necessary. At the University of Colorado Hospital, the laser safety program is being reinvented. A new laser safety policy that is workable and enforceable outside of operating rooms has been written and an appropriate training program is being developed. The process taken and the lessons learned will be shared.

Tuesday

7:00-8:00 AM

CEL4 Nobody Notices a Clean Window: A History of Successes in Radiation Protection

Daniel J. Strom; Pacific Northwest National Laboratory

A sign on my office wall reads, "I reserve the right to get smarter." Looking back over the 115 years since Röntgen discovered x-rays, there have been many opportunities to get smarter in the profession of radiation protection. Also known as "health physics" in the USA, radiation protection is the profession concerned with protecting humankind and the environment from the harmful effects of radiation. Because technologies that produce radiation have significant benefits, protection must be provided without "just saying no." Twenty years ago, Dade Moeller wrote of "the ages of radiation protection." In each age, radiation protection philosophy and goals evolved as we learned of additional del-

etrious effects of ionizing radiation on human health. These changes were followed by evolving radiation protection methods, and radiation protection regulations adopted lower dose limits, at least in developed nations. Radiation protection philosophy has come to be based on 3 principles, known as “justification,” “optimization,” and “limitation.” Radiation protection practice is based on 10 principles, whose execution can be summarized in 10 actions or commandments. These principles are time, distance, dispersal, source reduction, source barrier, personal barrier, decorporation, effect mitigation, optimal technology, and limitation of other exposures. The commandments, in their familiar form, are hurry (but don’t be hasty); stay away from it, or upwind of it; disperse it and dilute it; make and use as little as possible; keep it in; keep it out; get it out of you and off of you; limit the damage; choose best technology; don’t compound risks (don’t smoke). Examples of “getting smarter” leading to successes in radiation protection are presented for each principle and commandment. If one’s job is to ensure that nothing bad happens, perfect success can be indicated only by the absence of failure. Past failures of radiation protection are the dirty window; the current successes are the clean window that nobody notices. Radiation protection in the USA has evolved to the point where being taken for granted may endanger continued success.

CEL5 ANSI N43.1 Standard Draft: Radiation Safety for the Design and Operation of Particle Accelerators

James C. Liu, Lawrence S. Walker; Radiation Protection Department, SLAC, LANSCE, Los Alamos National Laboratory, Los Alamos, NM

The latest development and status of the ANSI N43.1 Standard “Radiation Safety for the Design and Operation of Particle Accelerators” are presented. The Standard sets forth the requirements and recommendations for accelerator facilities to provide adequate radiation protection for the workers, the public and the environment. The Standard applies to the design, installation, commissioning, operation, maintenance, upgrades and decommissioning of accelerator facilities, i.e., the complete life cycle of a facility. The Standard specifies the requirements and recommendations for both the management and the technical aspects of the radiation safety program, graded to the complexity and hazard levels of the facility. This Standard is applicable to all accelerator facilities, except facilities utilizing accelerators solely for medical applications (human or veterinary).

Chapter 2 of the Standard provides the definitions of common terms. Chapter 3 specifies the radiation safety programs for the accelerator facilities. Chapter 4 provides details of the requirements and recommenda-

tions for the Radiation Safety System(s) (RSS) which are used to control prompt radiation hazards. The RSS includes the Access Control System (ACS) and Radiation Control System (RCS). Chapter 5 describes the details of the ACS, while Chapter 6 describes the details of the RCS. Chapter 7 covers the accelerator operations. The Operational Radiation Safety program is described in Chapter 8. Chapter 9 covers the personnel training. There are five appendices to provide detailed guidance and resources in addressing the five key issues: 1) development of the Safety Assessment Document, 2) design and implementation of the interlocked-type ACS systems, 3) decommissioning program, 4) measurements of radiation and radioactivity, and 5) safety standards for commercially available and/or production-type accelerators.

* Work supported by Department of Energy contract DE-AC03-76SF00515

Wednesday 7:00-8:00 AM

CEL6 ABHP Exam Fundamentals – Tips for Successfully Completing the Certification Process
Charles (Gus) Potter, Kent Lambert; Sandia National Laboratories, Drexel University

The process for achieving ABHP certification – beginning with the application submission through the completion of the examination to certification – will be presented. Tips for navigating certification throughout the process will be discussed. Topics will include:

- * What are qualifying academic requirements?
- * Why require a degree?
- * What is meant by “professional level” experience?
- * How are Part I and Part II of the exam prepared?
- * How is the passing point determined?
- * What are the keys to good performance on the exam?
- * What pitfalls exist that detract from good exam performance?

This presentation will help persons interested in certification prepare an application that will accurately reflect the applicant’s education and experience. It will also provide tips for preparing to take the exam and answering questions on Part II of the exam in a manner that promotes maximizing scores. Persons who are already certified may gain insight into the process and identify areas where they would be willing to assist in certification process. The material presented consolidates pertinent exam policy/procedure into an easily digestible format, offering real world examples of good and poor responses.

CEL7 Diagnostic Reference Levels for CT Scanners

Ed Waller; University of Ontario Institute of Technology

The diagnostic reference level (DRL) is an increasingly important quantity used for optimization of radiation dose to both adult and pediatric patients undergoing CT scans. This CEL discusses the background behinds CT dose, the scientific foundations for calculation of CT dose and DRL, CT dose optimization and consideration of cancer risk with respect to CT dose.

CEL8 Innovative Approaches to Molybdenum-99 Production (that May or May Not Work)

Darrell R. Fisher; Isotope Sciences Program, Pacific Northwest National Laboratory

Current producers of molybdenum-99 for technetium-99m generators used in nuclear medicine rely on research reactors and dedicated isotope production reactors in Canada, Netherlands, Belgium, France, South Africa, Argentina, Australia, Poland, and Russia. Although the United States is the largest consumer, our country lacks a domestic supply of 99Mo. Recent reactor shutdowns for repair and maintenance interrupted international supplies and confirmed U.S. vulnerability to reliance on foreign producers. Further, science policy in the U.S. under the Energy Policy Act of 2005 mandates the shift in medical isotope production using highly enriched uranium to low-enriched (less than 20 percent) uranium-235 (fuels and targets) and reduces the future U.S. commitment to supply highly enriched uranium to foreign 99Mo producers. This mandate and the need for an enhanced 99Mo supply have spawned proposals for alternative production strategies using nuclear reactors, solution reactors, subcritical solutions, cyclotrons, alpha-particle accelerators, and linear accelerator-driven systems. These alternatives to standard nuclear reactor production of 99Mo will be discussed, highlighting and comparing the advantages and disadvantages of each.

Thursday

7:00-8:00 AM

CEL9 The Psychology of Radiation Safety – Simple Tools for Health Physicists

Ray Johnson; Dade Moeller & Associates

You do not have to be a trained psychologist to use a few simple counseling tools for helpful responses to radiation workers or members of the public. The first thing to remember is that all fears are OK. Our role in radiation safety is not to change people's fears, at least not directly. Telling people, "You do not need to be afraid," may not be the most helpful approach. A better approach may be to provide good information or evidence (hands-on is best) as a basis for people to change their own views. Before a fearful person is ready to hear our best information, however, we need

to let them know that their fears are OK and we understand their feelings. We can do this by an easily learned tool called "Active Listening." We will practice this tool. Another useful tool is to ask, "What do you think will happen to you, if you are exposed to radiation?" The answers to this question will help identify the underlying images that are driving a person's fears. Behind all anger or fear there is a powerful image of unacceptable consequences. Remember not to laugh or offer a judging response to whatever people may say. Their images are based on their imagination or perceptions and may have no connection to reality as we know it or believe. Keep in mind that each person's perception is truth to them. Fearful radiation images may also be identified by responses to the question, "What's so bad about that?" This question has to be used gently and is not appropriate when a person is in the midst of their anger or fear. The answers to this question are at a subconscious level and not accessible at the time of strong emotion. We also cannot answer this question by ourselves. When we attempt to answer this question, we will likely stop when the answers become difficult. You may have to raise this question repeatedly to peel away the layers (like an onion) to get to the primary underlying image. Another tool for persons asking about safety is to help them answer the question for themselves by guiding them through the eight steps from radiation cause to effects. To get the most value from this CEL, attendees should bring real scenarios for practice of counseling tools.

CEL10 US Ecology Low-Level Radioactive Waste Disposal site - Its History, Operations and the Agony of Closure

Earl Fordham; Office of Radiation Protection, Washington State Department of Health

The US Ecology Low-Level Radioactive Waste Disposal site is located within the Hanford Reservation northwest of Richland, Washington. Since operations commenced in 1965 the site has accepted over 4 million curies in over 13 million cubic feet of waste, including material from Three Mile Island, Fort St. Vrain and the Trojan plant. Waste is disposed in trenches about 300 – 700 feet long, 80 feet wide and 50 feet deep. While most disposed waste is Class A, several specialized trenches have been constructed for high activity (reactor) waste streams. Site environmental monitoring began in 1966 and in 1987 increased monitoring locations and drilled 5 onsite groundwater wells. The limiting post closure dose scenario is a local Native American, conducting normal activities on/around the closed site, receiving 22 mrem in the period of 1,000 – 10,000 years post cover. Situated at the center of the Hanford Reservation, the commercial disposal site is leading the charge for closure of disposal sites on Hanford.

Health Physics Society's 56th Annual Meeting

26-30 June - Palm Beach, Florida

Meeting Refund & Registration Policies on page 6

CHP? Yes No
 NRRPT? Yes No

HPS Member Number: hps _____
 Name for badge: (First) _____ (Last) _____ (Nickname) _____
 Affiliation (for badge) (limit to 18 characters and spaces): _____
 Address (for confirmation): _____
 City: _____ State: _____ Zip/Postal Code: _____
 Phone: _____ Fax: _____
 Email: _____ If Registering-Companion Name: _____

PREREGISTRATION DEADLINE 31 May 2011

REGISTRATION FEES: (Mark Appropriate Box)

	Preregistration Fees	On-Site Fees
<input type="checkbox"/> HPS Member (Sun. Reception, Mon. Lunch, Tues. Awards Dinner)	\$430	\$525
<input type="checkbox"/> HPS Member with '11 DUES (Sun. Recep, Mon. Lunch, Tues. Awards Dinner)	\$565	\$660
<input type="checkbox"/> Non-Member (Sun. Reception, Mon. Lunch, Tues. Awards Dinner)	\$535*	\$635*
<input type="checkbox"/> Student (Sun./Student Receptions, Mon. Lunch, Tues. Awards Dinner)	\$ 70	\$ 70
<input type="checkbox"/> Emeritus Member (Sun. Reception, Mon. Lunch, Tues. Awards Dinner)	\$215	\$262
<input type="checkbox"/> One-Day Registration <input type="checkbox"/> Mon/ <input type="checkbox"/> Tues/ <input type="checkbox"/> Wed/ <input type="checkbox"/> Thurs	\$275	\$275
<input type="checkbox"/> HPS PEP Lecturer (Sun. Reception, Mon. Lunch, Tues. Awards Dinner)	\$130	\$225
<input type="checkbox"/> HPS CEL Lecturer (Sun. Reception, Mon. Lunch, Tues. Awards Dinner)	\$280	\$375
<input type="checkbox"/> Companion (Sun. Reception, Sun.-Wed. Continental Breakfast)	\$ 70	\$ 70
<input type="checkbox"/> Emeritus Companion (Sun. Recep, Sun.-Wed. Cont. Breakfast)	\$ 35	\$ 35
<input type="checkbox"/> Exhibition ONLY (Exhibit Hall Badge)	\$ 40	\$ 40
<input type="checkbox"/> Exhibitor (Two Per Booth)	No Fee	No Fee
<input type="checkbox"/> Additional Tues. Awards Dinner Ticket(s) # of Tickets _____	\$ 55	\$ 55
<input type="checkbox"/> AAHP Awards Lunch Ticket(s) (Tues.) '11 NEW CHP Check if attending	Free	Free
<input type="checkbox"/> AAHP Awards Lunch Ticket(s) (Tues.) CHP other than above	\$ 10	\$ 10
<input type="checkbox"/> AAHP Awards Lunch Ticket(s) (Tues.) Guest	\$ 15	\$ 15

*Includes Associate Membership for year 2011 - FIRST TIME MEMBERS ONLY

Would you like your name included on the Attendee List? Yes No

SOCIAL PROGRAM

	Preregistration Fees	On-Site Fees	Total
<input type="checkbox"/> Annual HPS 5K Run/Walk (Tues, 6/28, 6:30 am) Shirt Size: S <input type="checkbox"/> M <input type="checkbox"/> L <input type="checkbox"/> XL <input type="checkbox"/>	# of Tickets _____ X \$ 25	# of Tickets _____ X \$ 30	_____
<input type="checkbox"/> Night Out (Wednesday, 6/29, 6:00 pm)	# of Tickets _____ X \$ 65	# of Tickets _____ X \$ 70	_____
<input type="checkbox"/> Annual Pub Crawl (Wednesday, 6/29, 6:30 pm)	# of Tickets _____ X \$ 15	# of Tickets _____ X \$ 20	_____

PAYMENT INFORMATION - Government Requisitions are accepted for registration, however Purchase Orders are NOT accepted for PEP, AAHP, Social/Technical Tour Registration. HPS TAX ID # 04-6050367

Check Payment: Health Physics Society, 1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101

VISA MasterCard American Express Discover
 Card Number _____ Exp. Date _____ CSV _____
 Credit Card Billing Address: _____
 Cardholder Name: _____ Phone Number _____
 Signature: _____ Email Address _____

Please see AAHP/PEP Registration form and Disabilities information on following page

Registration Section Total	\$ _____
Social Program Total	\$ _____
AAHP/PEP Total (From Back of Form)	\$ _____
TOTAL FEES ENCLOSED	\$ _____

Name: _____

Your housing while in Palm Beach, Florida: _____

DISABILITIES: The Annual Meeting is accessible to persons with disabilities. Please specify assistance required and a HPS representative will contact you. _____

AAHP Courses: Saturday, 6/25 - 8:00 AM - 5:00 PM

- AAHP1 Simple Tools for Counseling Radiation Workers and the Public (*Johnson*) \$200
- AAHP2 Statistical Issues in Health Physics (*Strom, Johnson*) \$200
- AAHP3 Introduction to MARSAME (*Toohey, Boerner*) \$200

PROFESSIONAL ENRICHMENT PROGRAM

Sunday, 6/26 8:00-10:00 AM

- 1-A Technical Auditing for Health Physicists (*Guenther*)
- 1-B EH&S "Boot Camp" for Radiation Safety Professionals: Part 1 (*Emery, Gutierrez*)
- 1-C Accelerator Physics for ES&H Professionals Part 1 (*Cossairt*)
- 1-D Operational Accelerator Health Physics I (*Walker, May*)
- 1-E Status of ANSI N42 Standards for Health Physics Instrumentation (*Cox*)
- 1-F Using RESRAD Family of Codes to Develop Cleanup Criteria & Dose Estimates (*Hansen, Maldonado*)

Sunday, 8:00-10:00
___/___/___ = \$90.00
1st 2nd 3rd
Yes, stand by list

Sunday, 6/26 10:30 AM-12:30 PM

- 2-A HPS Laboratory Accreditation Program Assessor Training (*Guenther*)
- 2-B EH&S "Boot Camp" for Radiation Safety Professionals: Part 2 (*Emery, Gutierrez*)
- 2-C Accelerator Physics for ES&H Professionals Part 2 (*Cossairt*)
- 2-D Nanotechnology: What's All the Fuss About? (*Marceau-Day*)
- 2-E Status of ANSI N42 Standards for Health Physics Instrumentation (*Cox*)
- 2-F An Introduction to the Project Management Professional Certification for HPs (*Hansen, Palmer*)

Sunday, 10:30-12:30
___/___/___ = \$90.00
1st 2nd 3rd
Yes, stand by list

Sunday, 6/26 2:00-4:00 PM

- 3-A Introduction to Uncertainty Calculation (*Van Dalsem, Tarzia*)
- 3-B EH&S "Boot Camp" for Radiation Safety Professionals: Part 3 (*Emery, Gutierrez*)
- 3-C Training First Responders on Radiological Dispersal Devices (RDDs) ... (*Groves*)
- 3-D Operational Accelerator Health Physics II (*Walker, May*)
- 3-E Health Physics/Nanotechnology Interactions (*Marceau-Day*)
- 3-F Going Public: Case Study of a 238Pu Contamination Spread to the Public Domain (*Jones*)

Sunday, 2:00-4:00
___/___/___ = \$90.00
1st 2nd 3rd
Yes, stand by list

Monday, 6/27 12:15-2:15 PM

- M-1 Part II Accelerator Health Physics ABHP Exam Problems (*Walker*)
- M-2 Medical Internal Dose Calculations – A New Generation Arrives (*Stabin*)
- M-3 Fundamentals of Gamma Spectroscopy – Part I (*Van Cleef*)
- M-4 Role of the Health Physicist in Radiation Accident Management (*Toohey*)
- M-5 The Basics of Magnetic Resonance Imaging and Spectroscopy (*Huda*)
- M-6 Updates on Laser & Optical Radiation Safety Standards (*Sliney*)

Monday, 12:15-2:15
___/___/___ = \$90.00
1st 2nd 3rd
Yes, stand by list

Tuesday, 6/28 12:15-2:15 PM

- T-1 A Decision Tool for Population Screening and Protection in Response to Radiological Events (*Lee*)
- T-2 So Now You're the RSO: Elements of an Effective Radiation Safety Program (*Morgan*)
- T-3 Fundamentals of Gamma Spectroscopy – Part II (*Van Cleef*)
- T-4 Skin Dose, Effects and Experiences in Fluoroscopy (*Martel*)
- T-5 Legal Considerations for Rad Risk and Dose Reconstruction ... (*McKay, Johnson*)
- T-6 Use of Portable Survey Meters and Portal Monitors for Radiological Triage (*Hertel, Bolch*)

Tuesday, 12:15-2:15
___/___/___ = \$90.00
1st 2nd 3rd
Yes, stand by list

Wednesday, 6/29 12:15-2:15 PM

- W-1 An Overview of Ionizing Radiation Carcinogenesis (*Raabe*)
- W-2 NUCL5470G Nuclear Forensic Analysis (*Waller*)
- W-3 Nanoparticle Characterization and Control Fundamentals: A Graded Approach (*Hoover*)
- W-4 OSL Applied Concepts Training (*Passmore*)
- W-5 New CT Dose Phantom: Motivation and Discussion (*Bakalyar*)
- W-6 Fluoroscopic Safety Management System (*Dielman*)

Wednesday, 12:15-2:15
___/___/___ = \$90.00
1st 2nd 3rd
Yes, stand by list

If FAXing registration form, (703) 790-2672 please do not mail the original.

AAHP Total	\$ _____
PEP Total	\$ _____
AAHP/PEP Total	\$ _____
(Transfer this total to previous page)	

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 May 31 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.