

PRELIMINARY PROGRAM



53rd Annual Meeting of the Health Physics Society

(American Conference of Radiological Safety)



July 13-17, 2008

David Lawrence Convention Center

Pittsburgh, PA

Key Dates

Current Events/Works-In-Progress Deadline	May 30
Hotel Registration Deadline	June 17
Social/Technical Preregistration Deadline	June 17
HPS Annual Meeting Preregistration Deadline	June 17
PEP Preregistration Deadline	June 17
AAHP Courses	July 12
Professional Enrichment Program	July 13-16
HPS 53rd Annual Meeting	July 13-17
American Board of Health Physics Written Exam	July 14

Registration Hours and Location

Registration at the David Lawrence Convention Center:

Saturday, July 12	2:00 - 5:00 pm
Sunday, July 13	7:00 am - 7:00 pm
Monday, July 14	8:00 am - 4:00 pm
Tuesday, July 15	8:00 am - 4:00 pm
Wednesday, July 16	8:00 am - 4:00 pm
Thursday, July 17	8:00 am - Noon

**Saturday AAHP courses will take place
in the Westin Pittsburgh.**

**Sunday PEPs will take place in the David
Lawrence Convention Center**

Monday - Thursday

**All Sessions, CELs and PEPs take place in
the David Lawrence Convention Center**

**HPS Secretariat
1313 Dolley Madison Blvd.
Suite 402
McLean, VA 22101
(703) 790-1745; FAX: (703) 790-2672
Email: hps@burkinc.com; Web Page: 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 web site at www.hps.org under the Pittsburgh Annual Meeting section. The deadline for submissions is Friday, May 30, 2008. All presentations will take place as posters on Monday, July 14, between 1:00-3:00 pm. Individuals will be notified of acceptance of their WIP submissions by the middle of June.

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

Saturday, July 12

AAHP 1 Radiation Risk Communication – Tools for Helping People Understand Radiation

8:00 am-5:00 pm *Westin*

AAHP 2 Key Elements of Preparing Emergency Responders for Nuclear and Radiological Terrorism: An Overview of NCRP Commentary 19

8:00 am-5:00 pm *Westin*

AAHP 3 Developing & Demonstrating Compliance with DCGLs for Subsurface Soils

8:00 am-5:00 pm *Westin*

Sunday, July 13

PEP 1-A thru 1-H

8:00-10:00 am

PEP 2-A thru 2-H

10:30 am-12:30 pm

PEP 3-A thru 3-H

2:00-4:00 pm

Welcome Reception

6:00-7:00 pm

Ballroom, Westin Pittsburgh

Monday, July 14

CEL1 After Katrina - Applying Health Physics Controls to Accomplish Restoration and Cleaning of Military Personal Property in the Gulf Coast Region

7:00-8:00 am 406

CEL2 Effectively Managing the "Under-Exposed"

7:00-8:00 am 407

ABHP Exam - Part 1

8:00-11:00 am *Westin*

MAM-A Plenary Session

8:10 am-12:05 pm *Ballroom B/C (CC)*

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

Noon-1:00 pm *Exhibit Hall*

PEP Program

12:15-2:15 pm

PEP M1 Low-Level Radioactive Waste Minimization At An Academic Institution. 301

PEP M2 Basic Statistics. 302

PEP M3 Fundamentals of Neutron Detection and Detection Systems for Assay of Nuclear Material. 303

PEP M4 Basic Principles of Environmental Control by Ventilation. 304

PEP M5 Operational Accelerator Health Physics I. 305

ABHP Exam - Part II

12:30-6:30 pm *Westin*

HPS Chapter Council

1:00-2:00 pm 406

Poster Session

1:00-3:00 pm *Exhibit Hall*

MPM-A External Dosimetry 401/402

MPM-B Homeland Security 403/404

MPM-C Regulatory/Legal Issues 406

MPM-D Operational Health Physics I 407

Student Reception

5:30-6:30 pm *Westin*

Tuesday, July 15

CEL3 Spend a Little, Save a Lot! How Lightning Strike Detection Technology Supports Company and Community Activities

7:00-8:00 am 406

CEL4 The Life Cycle of a Trend 407

TAM-A Environmental I 401-402

TAM-B: Special Session: Radiological Hazard Assessment, Medical Response, and Emergency Planning Software Tools 403/404

TAM-C1 Reactor Health Physics 406

TAM-C2 Accelerator 406

TAM-D Special Session: AAHP - Radiation Accidents and Incidents—Lessons Learned 407

TAM-E Medical Health Physics I 408/409

Movies 405

8:30 am-Noon 405

Reactor Section Business Meeting 305

Medical Section Business Meeting 408/409

Accelerator Section Business Meeting 406

AAHP Awards Luncheon 411/412 (CC)

PEP Program

12:15-2:15 pm

PEP T1 How to Conduct News Media Interviews. 301

PEP T2 Recent Developments in Radiation Litigation. 302

PEP T3 Radiological Performance Measures. 303

PEP T4 Neutrons- A Primer. 304

PEP T5 Operational Accelerator Health Physics II. 305

TPM-A Environmental II 401/402

TPM-B Special Session: Radiological Hazard Assessment, Medical Response, and Emergency Planning Software Tools 403/404

TPM-C NESHAPs - Rad Air 406

TPM-D Special Session: AAHP - Radiation Accidents and Incidents—Lessons Learned 407

TPM-E Operational Health Physics II 408/409

Movies 406

2:30-5:00 pm 406

AAHP Open Meeting

5:15 pm 407

HPS Awards Dinner & Reception

7:00-10:00 pm *Ballroom, Westin*

Saturday
AAHP courses take place in the Westin Pittsburgh.
Sunday PEPs take place in the David Lawrence Convention Center

Monday - Thursday
All Sessions, CELs and PEPs take place in the David Lawrence Convention Center

Wednesday, July 16

CEL5 Uncertainty Assessment in Atmospheric Dispersion Computations 7:00-8:00 am	406
CEL6 Looking at the Big Picture 7:00-8:00 am	407
WAM-A Special Session: Environmental Issues Associated with the Resurgence of Uranium Recovery Operations 8:30 am-Noon	401/402
WAM-B: Special Session: Emergency Response Modeling 8:30 am-12:15 pm	403/404
WAM-C: Medical Health Physics II 8:45 am-Noon	406
WAM-D Special Session: Pennsylvania's Radiological History I 8:30 am-Noon	407
Movies 8:30 am-Noon	405

PEP Program

12:15-2:15 pm

PEP W1 Overview of Interactive Radioepidemiological Program (IREP).	301
PEP W2 Implications for Security Based Uses of Radiation.	302
PEP W3 Laser Safety for Health Physicists.	303
PEP W4 How to Prepare for News Media Interviews.	304
PEP W5 Review of IATA Requirements for Air Transportation of Radioactive Material.	305

WPM-A Decommissioning 2:30-4:45 pm	401/402
WPM-B Special Session: Emergency Response Modeling 2:30-5:30 pm	403/404
WPM-C1 Internal Dosimetry 2:30-3:30 pm	406
WPM-C2 Nanotechnology 3:45-5:15 pm	406
WPM-D1 Special Session: Pennsylvania's Radiological History II 2:30-3:30 pm	407
WPM-D2 Special Session: Military Health Physics 3:45-5:30 pm	407

Movies 2:30-5:00 pm	405
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Environmental Section Business Meeting 2:30 pm	305
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Decommissioning Section Business Mtg 4:45 pm	401/402
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HPS Business Meeting 5:30 pm	406
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WPM-E Aerosol Measurements 6:00-8:00 pm	Westin
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Thursday, July 17

CEL7 Pu-238 Source Leak Event: Internal Dosimetry Considerations 7:00-8:00 am	406
CEL8 The Most Powerful Tool for Effective Risk Communication - Active Listening 7:00-8:00 am	407
THAM-A Instrumentation 8:30-11:45 am	401/402
THAM-B Emergency Planning/Response 8:45-11:45 am	403/404
THAM-C Risk Analysis 8:30-10:30 am	406
THAM-D Internal Dosimetry and Bioassay 8:30-11:45 am	407

Registration Hours

Convention Center

Saturday	2:00 - 5:00 pm
Sunday	7:00 am - 7:00 pm
Monday	8:00 am - 4:00 pm
Tuesday	8:00 am - 4:00 pm
Wednesday	8:00 am - 4:00 pm
Thursday	8:00 - 10:00 am

Exhibit Hall Hours

Monday	Noon - 5:00 pm
Tuesday	9:30 am - 5:30 pm
Wednesday	9:30 am - Noon

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- * AAHP 8 hour courses are granted 16 CECs each;
- * HPS 2 PEP courses are granted 4 CECs each;
- * HPS 1 hour CELs are granted 2 CECs each.

KEY

MAM	Monday AM Session
MPM	Monday PM Session
TAM	Tuesday AM Session
TPM	Tuesday PM Session
WAM	Wednesday AM Session
WPM	Wednesday PM Session
THAM	Thursday AM Session

Officers

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2008 Exhibitors

(as of 3/31/2008)

Arrow-Tech
Berkeley Nucleonics
Bionomics
Bladewerx LLC
Canberra
Cellular Bioengineering
Chase Environmental
Dade Moeller & Associates
Eckert & Ziegler Analytics
Eckert & Ziegler Isotope Products
Ecology Services
Enercon Services
Energy Solutions
Ev Products
F&J Specialty Products
Fluke Biomedical
Fuji Electric/Apantec LLC
G/O Corporation
Gamma Products
Health Physics Instruments
Hi Q
Hopewell Designs
ICx Radiation
IRSC
JL Shepherd
Lab Impex
Landauer
Laser Professionals
Ludlum Measurements
MACTEC
MGPI
MHF Logistical Solutions
Mirion Technologies (Global Dosimetry)
MJW Corporation
MJW Technical Services
NAS Medical
On Site Systems
ORTEC
Philotechnics
Pacific Northwest National Laboratory
Protean Instruments
Qal-tek
QSA Global
Radiation Safety & Control Services
Radiation Safety Academy/ Dade Moeller
Scionix
Solulient Technologies, LLC
Spectrum Techniques
St Gobain Crystals
Technical Associates
Teledyne Brown
Thermo Fisher Scientific
Thomas Gray & Associates

Important Events

Welcome Reception

Please plan on stopping in at the Ballroom of the Westin Pittsburgh Sunday, July 13 from 6:00-7:00 pm. There will be an opportunity to meet friends to start your evening in Pittsburgh. Cash bar and light snacks will be available.

Exhibits

Free Lunch! Free Lunch! – Noon, Monday, July 14. 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

All courses and sessions will take place at the David Lawrence Convention Center, Sunday through Thursday.

AAHP Awards Luncheon

David Lawrence Convention Center
Tuesday July 15
Noon-2:15 pm
Room 411/412

HPS Awards Banquet

An enjoyable evening spent with co-members of the National Health Physics Society. This event will be held in the Westin Pittsburgh Ballroom 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.

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 35

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

Sign up early for tours!

If tours are not full by the deadline of June 17, there is a chance that they will be cancelled.

Don't get to the meeting and find that the tour 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 June 17. 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.

53rd Annual Meeting, Pittsburgh, PA

July 13-17, 2008

WELCOME

The Western Pennsylvania Chapter of the Health Physics Society cordially invites you to attend the 2008 Annual Meeting of the Health Physics Society. The meeting will be held from July 13-17, at the David L. Lawrence Convention Center in Pittsburgh, Pennsylvania. This center is the largest LEED-certified 'green' building in the world, situated on a former brownfield along the Allegheny River in the heart of the downtown Pittsburgh Cultural District. Come join your friends and colleagues in America's most livable city.

PITTSBURGH

Founded in 1758 following the British defeat of the French during the French and Indian War, Pittsburgh was named after William Pitt, Britain's Secretary of State at the time. The city is located in the southwest corner of Pennsylvania at the forks of three rivers, where the Allegheny and Monongahela meet to form the Ohio River.

Pittsburgh became the industrial giant of the world, producing steel, iron, aluminum, and glass. This industry, however, created the image of a "smoky city," or what writer James Parton once described as "Hell with the lid off." But by the 1960s, Pittsburgh earned a special place in the history of urban development by remaking itself through public-private partnerships into a city with clean air, clean water, grand public spaces and architecturally significant buildings. This tradition is continuing to this day.

Today Pittsburgh and its surrounding countryside support thriving industries in advanced materials, information technology, biomedical sciences, energy, business services and higher education. It is regularly recognized for its overall livability. The area is rich in the visual and performing arts, is home to three major league sports teams, and includes such amenities as amusement parks, zoos, and a large range of outdoor recreational opportunities. We've come a long way in 250 years! Come and see for yourself!

Please visit the Greater Pittsburgh Convention & Visitors Bureau website for more information at <http://www.visitpittsburgh.com/>

WEATHER

The average temperature for Pittsburgh in July is 73 degrees, with an average high of 85 degrees and an average low of 62 degrees. The average humidity ranges from 53 to 83 percent, so you will want to bring some light clothing for outdoors. With an average rainfall of 3.8 inches in July, you may want to pack a light rain jacket and umbrella, just in case. Note, however, that we have requested fair and sunny weather for our meeting.

HEADQUARTERS HOTEL - Westin Convention Center Pittsburgh

The **Westin Convention Center Pittsburgh** is the headquarters hotel for the meeting. Connected by a sky-bridge to the David L. Lawrence Convention Center, the Westin provides first-class accommodations, including a business center and high-speed internet-wired rooms, as well as complimentary transportation to some of the local attractions Pittsburgh has to offer.

The overflow hotel is the **Omni William Penn**, located only three blocks from the David L. Lawrence Convention Center. Since 1916, the Omni William Penn Hotel has captivated guests such as John F. Kennedy and Lawrence Welk with its striking beauty and charming elegance. Celebrated for its ultra comfortable guest room accommodations, award-winning cuisine, this Pittsburgh luxury hotel has been lavishly restored to its original grandeur.

For reservations go to www.hps.org/meetings and look under the Pittsburgh meeting to make an online reservation. Room rates are \$135 for the Westin (412-281-3700) and \$132 for the Omni (412-281-7100).

HOSPITALITY SUITE

Registered spouses and companions will again enjoy the benefit of a Hospitality Suite at the Westin Hotel. The Suite, located on the 1st level of the hotel, will open at 10:00 am on Sunday, July 13th and daily thereafter. Local HPS members will be on hand to help with planning day trips or selecting restaurants; newspapers, books, and games will also be available. A continental breakfast will be available Monday through Wednesday mornings for registered companions.

TRANSPORTATION

Arriving by Air

Pittsburgh International Airport is only 30 minutes from downtown Pittsburgh. The pickup area for taxis, rental cars, shuttles, and hotel vans is located on the baggage claim level of the Landside Terminal. Taxi service is approximately \$40 and shuttle service is approximately \$20 per person or \$35 roundtrip. The Port Authority Transit system (PAT) also offers bus service from the airport to downtown Pittsburgh. The 45-minute trip costs \$2.60 (one-way), with departures every 30 minutes.

Driving from the airport - Exit Airport onto Route 60 South, follow signs to Pittsburgh to Interstate 279 North (Fort/Pitt Bridge and Tunnel); Go through the tunnel. Take the Liberty Avenue exit (straight off bridge). Follow Liberty Avenue to 10th Street. Turn left, and the hotel is on the right.

Arriving by Car

From the East

Take the Pennsylvania Turnpike to Exit 57 (Monroeville) to Route 376 West. Take 376 West to Exit 1C (Grant Street). Take Grant Street to 11th Street and turn left. Go 1 block to Pennsylvania Avenue. Turn left and go 1 block to 10th Street. Turn left on 10th Street, and the hotel entrance is on the left.

From the North

Take Interstate 79 South to Interstate 279 South. Follow the signs to Interstate 579 South and cross over Veterans Bridge. Take the 7th Avenue Exit. Proceed to the second light and turn right. Pass the next light and the hotel is driveway on the right.

From the South or West

Take Interstate 79 North to the Pittsburgh Exit. Take Interstate 279 North across Fort Pitt Bridge into the city. Follow the signs to Liberty Avenue. Take Liberty Avenue to 10th Street and turn left. The hotel entrance is on the right.

AVIS CAR RENTAL

Special discounts are available on a wide selection of vehicles and are good from one week before to one week after the meeting. So take in the sights and explore the surroundings.

To reserve a car, contact Avis at 1-800-331-1600 and use your Avis Worldwide Discount (AWD) number J953510. Or reserve online and have your discount number automatically included in your reservation and receive an email confirmation. Go to the HPS website, www.hps.org under the Pittsburgh meeting section to reserve your car online.

CHILDCARE

Attendees that plan to use these childcare services should contact the companies below prior to their arrival in Pittsburgh, to allow the centers to make the necessary preparations and obtain the required immunizations and other information from the parents. The Health Physics Society provides these service names as a convenience to its registrants, but makes no other claims as to the services provided.

Professional Nannycare Solutions (412.262.6216) located in Moon Township - used/recommended by the Westin Hotel (scheduled individually by the attendee)

Small World Early Learning Center (412.391.8250) located on Penn Avenue (across from convention center) - if we can provide one room at the convention center to set up, they will work with us to provide "daycare" on-site (Minimum of ~6 kids required)

Miss Mary's Playtime (412.366.7529) located @ 4700 McKnight Road, Ross Twp. - drop-in child-care M-F 7:15 AM to 6 PM. If we need 1 or 2 evenings during the week, she will work with us to be open at that time(s). (Minimum of 6 kids required.)

SOCIAL EVENTS

Sunday, July 13

Tour and Wine Tasting

12:30-4:00 PM

Pre-Registration: \$46.00/On-Site: \$51.00

Tour and Wine Tasting at the La Casa Narcisi Winery. A family owned and operated facility, the winery is located north of Pittsburgh. A selection of 24 varietals, including red, white, pink, fruit, and two blended wines, compose their lineup.

From there, we move to the Tour and Wine Tasting at the C.T. Miller Winery. Located south of Pittsburgh, Ted and Janet Miller produce wines solely from the grapes harvested from their seven-acre vineyard.

City Tour with a stop at the Duquesne Incline

1:00-4:00 PM

Pre-Registration: \$33.00/On-Site: \$37.00

Driving tour of Pittsburgh's Golden Triangle to view the beautiful architecture, bustling Commerce Center and hear the story of Pittsburgh's past two Renaissances and the exciting changes that our third Renaissance is bringing to the city. Also, visit the Ft. Pitt Museum.

3rd Annual Radioactive Open Mic Night!

8:00-11:00 PM

FREE

In appreciation of the many musicians in the Health Physics Society, Applied Health Physics, Teletrix and Chase Environmental will host the Third Annual Radioactive Open Mic Night on Sunday evening on the roof of the David L. Lawrence Convention Center (or or inside the Convention Center if our requested fair weather hasn't been delivered!).

Come enjoy classic rock n roll music provided by a good local band. Attendees are invited to participate in the fun by joining the band onstage to play an instrument or sing a song. A song list will soon be published on the web for participants to preview and select a song to sing or jam on.

Have fun entertaining your friends and colleagues from the health physics community by participating in this lively event! If you can't sing or play an instrument just come to listen and dance the night away! Admission is FREE to all attendees. There will be a cash bar serving beer and wine.

Monday, July 14

City Tour with a stop at the Duquesne Incline

9:00 AM-Noon

Pre-Registration: \$33.00/On-Site: \$37.00

Driving tour of Pittsburgh's Golden Triangle to view the beautiful architecture, bustling Commerce Center and hear the story of Pittsburgh's past two Renaissances and the exciting changes that our third Renaissance is bringing to the city. Also, visit the Ft. Pitt Museum.

Church Tour

9:00 AM-3:45 PM

Pre-Registration \$36.00/On-Site: \$41.00

We will begin at the United Methodist Church of Pittsburgh. The apsidal church, admirably proportioned, is constructed in the shape of a cross. The two spires, one raising to a height of 175 feet, are elaborately decorated with buttresses, louvers, spired pinnacles and gargoyles. The next stop is St. Anthony's Chapel - The Shrine On The Hill. Saint Anthony's Chapel is located on Troy Hill which overlooks the Allegheny River on Pittsburgh's North Side. The Shrine, dedicated to "The Wonder Worker," Saint Anthony of Padua, houses a vast collection of relics. We will then enjoy lunch (cost of lunch not included in tour price) at the Church Brew Works. Built in 1902, in the Northern Italian architectural style. The same painstaking care and effort that was used to construct the building was also taken in renovating the church and the rectory. The original pews have been revitalized to serve as dining room seating. Additional wood from the pews was used to build the bar. After lunch, we will visit the Rodef Shalom. The sanctuary seats over 1,100 people on the first floor and an additional 350 in the balcony, 100 in the Josiah and Carrie Cohen Chapel, and 550 in the J. Leonard Levy, which has small stained glass windows replicating the windows of a German synagogue, destroyed by the Nazis. Our final stop will be Saint John the Baptist Byzantine Catholic Church - It was February 1900 when a group of Carpatho-Rusin immigrants, originally belonging to St. John the Baptist Galician Greek Catholic Church, decided to establish their own church dedicating it to the memory of St. John the Forerunner as "Second Greek Catholic St. John the Baptist Church."

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

Pittsburgh Zoo and PPG Aquarium

9:00 AM-5:00 PM

Pre-Registration: \$59.00/On-Site: \$64.00

See the new Water's Edge with polar bears, otters and walruses. We will have the motorcoach all day and will begin return shuttle service starting at 1:00 pm and continue every hour after that until 5:00 pm. Admission is included in the price of the tour.

Walking Architectural Tour with High Tea

Noon-4:00 PM

Pre-Registration: \$36.00/On-Site: \$41.00

Pittsburgh's distinctive skyline is a seamless blend of past and present. From Henry Hobson Richardson's magnificent Allegheny County Courthouse and the marvelous stone work to the city's 19th century office buildings, to PPG Place, the soaring gothic tower of glass designed by world-renowned architect Philip Johnson, Pittsburgh boasts works of architectural genius at every turn.

The Walking Tour will be followed by Royal High Tea with Champagne or Mimosas at the Palm Court. The Palm Court serves light sandwiches, scones, and pastries and specialty drinks in an elegantly understated atmosphere.

Annual Pub Crawl

6:00-11:00 PM

Pre-Registration: \$30.00/On-Site: \$35.00

What's an HPS meeting without a Pub Crawl? Not as memorable!

Come join us as we provide transportation and a souvenir T-shirt as we enjoy some of the South Side's best bistros, restaurants and pubs, and where you'll get the chance to socialize with some old acquaintances and renew friendships while getting reduced drink or meal costs.

Tuesday, July 15

Annual HPS 5K Run/Walk

6.30 AM-8.30 AM

Pre-Registration: \$30.00/On-Site: \$35.00

The annual 5K Fun Run/Walk will be held on a flat out and back course along the bank of the Allegheny River providing a scenic view of the city. The starting point will be at the River Front Park Pavilion located a few miles from the convention center. Bus transportation will take the participants from the Westin Hotel to River Front Park and back. Awards will be given to the overall and age group winners. The event includes T-shirt, refreshments, race timing, and awards.

Golf Outing

8:00 AM-4:00 PM

Pre-Registration: \$84.00

Enjoy 18 holes of golf with cart, food and refreshments throughout the beautiful course at Birdsfoot Golf Club in Freeport, PA. Optional club rental is available for \$20.00. Go to <http://www.birdsfoot.com/index.php> for more information on the course. There will be no On-Site Registration for the golf outing, so sign up early!

Phipps Conservatory, Nationality Classrooms, Heinz Chapel

8:45 AM-4:00 PM

Pre-Registration: \$46.00/On-Site: \$51.00

Tour Phipps Conservatory, and enjoy outdoor gardens and collections which include the Discovery Garden, bonsai, butterflies, perennials, annuals, herbs and aquatic plants in this 13 room Victorian glass house located in Schenley Park. Lunch and shopping will be on your own on Graig Street. Tour Heinz Chapel on the campus of the University of Pittsburgh. The Chapel began as a gift, Henry John Heinz, the founder of the H.J. Heinz Company, wanted to honor his mother, Anna Margareta Heinz, with "a building" at the University. Tour the Nationality Classrooms where twenty-six Nationality Rooms depict Pittsburgh's ethnic heritage - European, Asian, Middle Eastern and African - through authentic examples of architecture and décor.

Fallingwater and Kentucky Knob

9:15 AM-4:45 PM

Pre-Registration \$79.00/On-Site: \$84.00

We will begin with a tour of Fallingwater. Designed by Frank Lloyd Wright for the Kaufmann family in 1935, the house is dramatically cantilevered over a waterfall. Named one of "50 places of a lifetime" by National Geographic Traveler. Lunch will be on your own at the Fallingwater Café. Our next stop is to tour Kentuck Knob which rises from a mountainside high above the Youghiogheny River gorge. Like nearby Fallingwater, the house was designed by

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

pre-eminent American architect Frank Lloyd Wright. This extraordinary home, built of native stone and tidewater cypress, is set amidst natural woodlands, and surrounded by contemporary sculpture and historic artifacts.

Frick Art and Historical Center

1:00-3:00 PM

Pre-Registration: \$38.00/On-Site: \$42.00

Enjoy The Frick Art Museum, Car and Carriage Museum, Clayton Mansion, the Greenhouse, Museum Shop and Café. Over five acres of lawns, gardens and historic buildings make up the Frick Art and Historical Center, which is adjacent to part of the sprawling Frick Park.

Wednesday, July 16

Le Cordon Bleu School of Cooking

2:00-4:00 PM

Pre-Registration: \$40.00/On-Site \$45.00

The Pennsylvania Culinary Institute offers culinary education programs combining the history and methods of the esteemed Le Cordon Bleu Program. Join the Pastry Chef as he prepares some of his tasty pastry treats and enjoy the sweet art that he creates.

Night Out - Heinz History Center

6:00-10:30 PM

Pre-Registration: \$45.00/On-Site: \$50.00

Our Special Night Out this year will be held at the Heinz History Center, located just a couple of blocks from the Westin Hotel and David Lawrence Convention Center. This renovated building now houses many examples of what made Pittsburgh and its surrounding area famous, and includes the Western Pennsylvania Sports Museum as well. Dinner is included in the cost of the event.

Thursday, July 17

Kennywood Amusement Park and Sandcastle Water Park

9:30 AM departure-10:00 PM

Pre-Registration: \$79.00/On-Site: \$84.00

Kennywood after 5:00 pm Pre-Registration \$56.00/On-Site: \$61.00

Pre-Registration for both parks: \$107.00/On-Site: \$112.00

Kennywood Amusement Park is America's finest traditional amusement park and a national historic landmark featuring five roller coasters. Sandcastle Water Park - Wet, Wild, and Fun! The mini coach leaves the hotel at 9:30 AM, and return shuttle service begins hourly from 1:00-10:00 PM. The cost for transportation and admission to Kennywood after 5:00 PM is \$56.00.

Heinz Field, PNC Park, Penn Brewery Company

12:30-4:30 PM

Pre-Registration: \$44.00/On-Site: \$49.00

Tour Heinz Field - Since 2001, when the gates were opened to this 65,050-seat state-of-the-art facility, Heinz Field has provided a thrilling, behind the scenes view of the Steelers and Panthers football teams to thousands of men, women, and children of all ages. In addition, the view of the city's unique skyline and Point State Park from the South Plaza within the stadium serves to add to the tremendous excitement that is Heinz Field.

Tours of Heinz Field provide guests with a behind-the-scenes look into the Coca-Cola Great Hall, Clubs, Luxury Suites, Press Box, Field, South Plaza, and much more! We encourage you to personally see Heinz Field - Pittsburgh's latest and greatest landmark.

PNC Park - Opened in spring 2001, is a classic-style ballpark, an intimate facility that embraces the progressiveness of Pittsburgh while saluting the spirit of early ballparks originals such as Forbes Field, Wrigley Field and Fenway Park. This riverfront facility combines the best features of yesterday's ballparks- rhythmic archways, steel trusswork and a natural grass playing field.

Visit Penn Brewery Company - ALT"ER"EGO BIER. Hailing from the industrial city of Düsseldorf, "Alt" (the German word for "old") uses the old method of brewing. An exceptionally smooth and delicate brew is accomplished by utilizing ale yeast and maturing it in a lager cellar. It has a dark amber color and a good bitterness to balance the malty body. This beer is extremely drinkable and because it is unlike the lager beers that Penn Brewery traditionally produces, it is like our alter ego.

TECHNICAL TOURS

Monday, July 14th

National Robotics Engineering Center & Post Gazette

12:30-3:00 PM

\$25.00

The National Robotics Engineering Center (NREC) opened on July 29, 1996 as an operating unit within Carnegie Mellon University's Robotics Institute (RI). Based at an off-campus location in Pittsburgh's Lawrenceville neighborhood near the CMU campus, NREC (pronounced "en-rec") resides in a renovated, 100-year-old warehouse on a reclaimed industrial brownfields site that previously was home to several suppliers of equipment for the steel industry. NREC was the brainchild of Red Whitakker, director of the RI's Field Robotics Center (FRC). In 1994, he and other FRC scientists agreed that mobile robotics technology had matured sufficiently to enable commercial applications in markets such as agriculture, construction, mining and electric/gas utilities. With a strong focus on applied research, they developed projects in collaboration with NASA and large companies such as John Deere, Toro Corporation, Consol, Joy Mining, New Holland, and Ford; collectives such as the American Nursery and Landscape Association, and NY Gas; and smaller companies such as Ultrastrip Systems.

Examples of successful technology from two health care related projects transferred to their sponsors are: one reduces the bottleneck in drug discovery for central nervous system disorders, the other, provides a faster and more accurate way to calculate the pose of patients just prior to radiotherapy of cancer tumors.

Today, NREC thrives as home to more than 100 of the world's leading robotics experts conducting applied research and development on more than two dozen innovative projects, many of which have been licensed for commercialization and are being deployed successfully in real-world applications.

Additionally, in keeping with CMU's mission as an academic leader, NREC also operates fun, educational outreach programs for young people. One such program, the Robotics Academy involves students, grades 5 through 12, in a wide variety of projects - such as building small robots - which helps kids learn principles of math, science, engineering, physics, resource allocation, teamwork and creative problem solving. Additional information about NREC can be found at <http://www.rec.ri.cmu.edu/>. Limited to the first 25 people who register.

Tuesday, July 15th

Super Computing and AP1000 Control Room tours at Westinghouse (Monroeville) and Westinghouse Materials of Excellence/Hotcell Tour & Seimens Presentation at Westinghouse (Churchill)

10:30 AM-3:30 PM

\$25.00

As a leading supplier of new nuclear power plant generating capacity Westinghouse Electric Company is on the forefront of the renaissance of the nuclear power industry. Building on over 50 year experience of servicing and refueling existing power plants, Westinghouse' design for the flagship AP1000 plant is built on a solid technology foundation. At the Science and Technology Department's Churchill, Pennsylvania, site Westinghouse operates its own "Hot Cell" laboratories in which materials which have seen service in plants are examined and evaluated. The data and information developed in this laboratory supports and enhances the database that supports Westinghouse evaluations and assessments of operating power plants. The tour showcases this unique facility and demonstrates how evaluations of materials are conducted remotely within the safe operating environment of the laboratory. A snackbar is available on site for lunch, or you can bring a bag lunch. Lunch is not included in tour price.

The AP1000 Main Control Room/Simulator Development and Testing Facility is used to conduct rapid prototype tests of our control room and human systems interface design. The results are analyzed and used to refine the design. The main control room is a compact control room that utilizes primarily "soft" interfaces, such as monitor based plant displays, soft controls, advanced alarm system, and computerized procedures. As the design matures the test facility will evolve into a test bed platform to conduct a "human factors" validation test. This validation test will prove that the new control room ensemble (ie., the design, training of operators, and plant procedures) can be used by the operators to safely monitor and control the plant during normal, abnormal and emergency conditions.

Solid Oxide Fuel Cell technology can provide high quality power and low environmental impact. It is clean, efficient cost-effective power generation that supplements grid power and complements central station power. Gain an understanding of how these fuel cells work and participate in a virtual tour of the R&D facility where Siemens engineers and technicians are developing processes to make reliable fuel cell power a reality.

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

Wednesday, July 16th

Homer Laughlin Pottery and Heritage - WTI, Inc

10:00 AM-3:30 PM

\$25.00

Specializing in high-fired, lead-free glazes with an Alpha Alumina body. Homer Laughlin remains the largest domestic pottery employing over 1100 skilled workers in a 37 acre facility. As a leader in the china design and manufacturing market, Homer Laughlin has pursued the issues that matter most: lead-free dinnerware, durability, contemporary design and timely delivery. A snackbar is available on site for lunch, or you can bring a bag lunch. Lunch is not included in tour price.

In 2005, Heritage became the company's sole stockholder. Working together, their teams provide effective solutions for the hazardous-waste and industrial - by products markets. The core service of WTI is incineration of RCRA - hazardous and non-hazardous wastes. The materials accepted are stored, and treated range from bulk solids and bulk liquids, plus a wide variety of containers, including lab packs. HLC - They manufactured the radioactive fiesta ware dishes. Collectors go there on Saturday-they open up the warehouse for a sale.

Thursday, July 17th

PNC Firstside Center and Pittsburgh Glass Center

1:00-4:00 PM

\$25.00

Built on the site of an abandoned rail yard in downtown Pittsburgh, PNC Firstside Center is a magnificent five-story structure that has been compared to office buildings of Frank Lloyd Wright. Firsthand look at what is considered by many to be "America's workplace of the future".

Pittsburgh Glass Center is one of the top glass facilities in the U.S. World-renowned glass artists work. Watch as they do demonstrations of their art of blowing glass and enjoy the glass exhibits.

THINGS TO DO ON YOUR OWN

* Walk the Strip District - The Strip District is a one-half square mile area northeast of downtown Pittsburgh. In the 1950's there were 71 wholesale produce dealers in the produce terminal. By the 1970's there were only about two dozen dealers left. These remaining dealers began to expand their businesses by opening retail stores on Penn Avenue and Smallman Street. Today the Strip District is best known for its retail produce and ethnic food stores, restaurants and coffee shops.

* Rent a bike for the day which includes a helmet and lock. The Golden Triangle Bike-N- Blade Company will accommodate you on this venture. There are trails up and down each side of all our rivers, with one even going to Washington, D.C. The cost for the day from 10:00 - 5:00 is - \$30.00 per person.

* Visit the Jennerstown Speedway, one of the oldest short-track facilities in the United States. The track is a .552 mile oval layout that is even NASCAR sanctioned. Cost is \$8.00 admission.

* Take in a Pittsburgh Pirates Game during your stay. Games with Pittsburgh vs St. Louis are being played on Friday, July 11 at 7:05 PM; Saturday, July 12 at 7:05 PM and Sunday, July 13 at 1:35 PM. Go to http://pittsburgh.pirates.mlb.com/ticketing/singlegame.jsp?c_id=pit to buy tickets to a game.

* Enjoy visiting the Carnegie Science Center Laser Show and Omnimax Theater. The Omnimax is showing Dinosaurs Alive and Sea Monsters at 2:15 and 3:15 either day. Laser shows only on Saturday are at 7:00, 8:00, 9:00 and 10:00 p.m. The price of admission to Laser shows or the Omnimax Theater is \$8:00 per person.

* Take in a performance at the Benedum Center for the Performing Arts to see MAME, a madcap musical comedy. Join the eccentric but kindhearted Auntie Mame and her orphaned nephew Patrick on their madcap Manhattan adventures. Matinee performances on July 12 & 13. Pricing from \$15.50 - \$37.50. Evening performance on July 12th only and prices start at \$21.50- \$43.40.

* Or take in a performance at the CLO Cabaret to see SHEAR MADNESS. On an ordinary day at the Shear Madness hair salon, the regulars stop by for their weekly set and style, a little gossip or an old-fashioned shave. But when a scissor job gone bad leaves the upstairs landlady dead as a doornail, the crazy company of customers and stylists below find themselves locked in and fingered for murder. Matinee performances are at 2:00 p.m. on July 12th and 13th and evening performance at 7:30 p.m. Pricing is \$32.50 per person.

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

* Visit the Pittsburgh Glass Center to see demonstrations of glass blowing. Pittsburgh Glass Center is one of the top glass facilities in the U.S. World-renowned glass artists work and teach in this studio. Cost for tour: \$10.00 per person.

Please note: Due to workshop classes there will be no hands on activities at this time. However, the tour will still allow you to observe the students being trained.

* Visit the Carnegie Museum of Art and Natural History. Founded in 1895, Carnegie Museum of Art is the first museum of modern art in the United States. Experience the fascinating span of art history from ancient Greece through French Impressionism, into a world of contemporary art. Explore paintings, sculpture, architecture and decorative arts. Known as "home of the dinosaurs," the Natural History Museum houses the third largest repository of dinosaur fossils in the world. The museum also boasts one of the best gem and mineral collections in the United States. Other permanent exhibits include Walton Hall of Egypt, Polar World, Hall of African Wildlife, and Alcoa Hall of American Indians. Cost for admission: \$9.00 per person.

* Kayak Pittsburgh - You've never seen Pittsburgh like this. You've never seen the skyline or the bridges, or the ball park from inside a kayak or canoe. It's a unique experience. Tranquil and peaceful. In many way, Pittsburgh is defined by its rivers. Experience Pittsburgh in all three ways! Costs: Solo - \$14.00 for the first hour and \$6.00 for every ½ after. Tandem Kayaks - \$20.00 for the first hour and \$8.00 for every ½ after. Canoes - \$14.00 for the first hour and \$6.00 for every ½ after. Hydrobikes - \$15.00 for the first hour and \$5.00 for every ½ after.

* Andy Warhol - The museum features extensive permanent collections of art and archives. Temporary exhibitions, which may include the work of other artists, are presented on a regular basis. The Andy Warhol Museum presents the work of one of the most influential American artists of the second half of the 20th century. It is also a primary resource for anyone seeking insights into contemporary art and popular culture. Admission cost: Adults - \$15.00, Srs. (55+) - \$9.00, Students - \$8.00, Children (3-18) - \$8.00. Hours of operation: Tues. - Thurs. 10:00 - 5:00, Saturday & Sunday: 10:00 - 5:00. Closed Mondays.

* Just Ducky Tours - Tour the city by land and water on Pittsburgh's most exciting sightseeing trip. Travel the streets on a genuine WWII amphibious vehicle. Cost: Adults: \$19.00, Children (3-12): \$15.00, Children (2 & under): \$5.00. Hours of operations: Monday - Friday: 10:30, 12:00, 1:30, 3:00, 6:00. Saturday & Sunday: 10:30, 12:00, 1:30, 3:00, 4:30, and 6:00. Tours depart from Station Square daily and are approximately one hour.

* National Aviary - America's only accredited indoor zoo just for birds. Featuring interactive feedings and over 600 species of birds. Admission cost: Adults: \$9.00, Senior (over 60): \$8.00, Children (2-12): \$7.50, Children under 2: Free. Hours of operation: 10:00 5:00 every day.

* Children's Museum of Pittsburgh - Provides innovative museum experiences that inspire joy, creativity and curiosity. Also provides the highest quality exhibits and programs for learning and play. Admission Cost: Adults: \$9.00, Children (2-18): \$8.00, Seniors: \$8.00, Children under 2 are free.

* Mattress Factory - is a museum of contemporary art that presents art you can get into - room-sized environments, created by in residence artists. Admission cost: Adults: \$9.00, Seniors: \$7.00, Children under 6 years are free. Hours of operation: Tuesday - Saturday: 10:00 - 5:00 and Sundays: 1:00 - 5:00.

* Brewery Tour - visit Pittsburgh Brewing - Pittsburgh tradition since 1861, represents the marked success of originality and quality brewing. As one of the country's oldest breweries. Also visit Pittsburgh Penn Brewery home of the authentic award winning German Beers!

**53rd Annual Meeting of the Health Physics Society
Pittsburgh, PA, July 13-17 - Preliminary Scientific Program**

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

MONDAY

7:00-8:00 AM **406**

CEL 1 After Katrina – Applying Health Physics Controls to Accomplish Restoration and Cleaning of Military Personal Property in the Gulf Coast Region

Jim Hylko

Paducah Remediation Services, LLC

7:00-8:00 AM **407**

CEL 2 Effectively Managing the “Under-Exposed”

Bob Emery

The University of Texas Health Science Center at Houston

8:10 AM-12:05 PM **Ballroom B/C (CC)**

Plenary Session

8:10 AM

Welcome to Pittsburgh

Kevin Nelson

President, Health Physics Society, Local Arrangements Committee Representative

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

Radiation Primer – A Citizens Guide to Radiation Classic, K.

Radiation Safety Academy Division/Mayo Clinic

8:25 AM

Introduction of Robert S. Landauer, Sr. Lecture

Dodd, B.

Awards Committee Chair

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

Radiation in Medicine – Back to the Future

Tuttle, R.M. (Robert S. Landauer, Sr. Lecture)

Memorial Sloan-Kettering Cancer Center Endocrinology Service

9:15 AM **MAM-A.3**

Communicating Risk with the Patient

Vetter, R.

Mayo Clinic Radiation Safety

10:00 AM **BREAK**

10:30 AM

Introduction of G. William Morgan Lectures

Dauer, L.T.

President, Medical Health Physics Section

10:35 AM **MAM-A.4**

CT Scan Risk Estimates

Brenner, D. (G. William Morgan Lecture)

Center for Radiological Research/Columbia University Medical Center

11:05 AM **MAM-A.5**

The UPSide of Risk: Benefits

Zanzonico, P. (G. William Morgan Lecture)

Memorial Sloan-Kettering Cancer Center/Weill Cornell Medical College/Gerstner Sloan-Kettering Graduate School

11:35 AM

MAM-A.6

Patient Risk in Radiation Oncology

Travis, L.

National Cancer Institute

Noon-1:00 PM **Exhibit Hall C**

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

1:00-3:00 PM **Exhibit Hall**

Poster Session

Accelerator

P.1 Experimental and Monte Carlo Verification for Shielding Dosimetry Using a 10 MeV Linear Accelerator

Ankrah, M., Mitchell, K.

Idaho State University, Pocatello

P.2 Shielding and Radiation Dose Analysis for a Dense-Plasma Focus Neutron Source

O'Brien, R., Culbreth, W.

University of Nevada, Las Vegas

P.3 Radiation Transport Modeling of a Detector Shield for ZR at Sandia National Laboratory

Lowe, D., Culbreth, W.

University of Nevada, Las Vegas

P.4 Applications of Laser Compton Scattered X-rays to Fissionable Materials Identification and Imaging

Naeem, S., Wells, D., Chouffani, K.

Idaho State University

Biokinetics/Bioeffects

P.5 Safety Assessment of Mobile Phone and the Need for Further Research

Kumar, N., Khan, R.

Babasaheb Bhimrao Ambedkar University, India

Decommissioning

P.6 Calibration and Characteristics of Waste Activity Monitors Used for Decommissioning Wastes

*Yeh, C-H., Yuan, M-C., Chang, B-j.**

Institute of Nuclear Energy Research, Taiwan

P.7 “Scan Rates” A Form-base Excel Spreadsheet to Model the Detectability of Surface Radioactive Contamination

Avtandilashvili, M., Butikofer, T., Matthews, T., Cummings, R.

Idaho State University

Emergency Planning and Response

P.8 Evaluation of the Public Awareness in Nuclear Power and Radiation

Mitchell, M., Wang, W-H., Matthews, K.L., Kelly, L.R.

Louisiana State University, University of Nevada, Las Vegas

P.9 Evaluation of the FDA Derived Intervention Levels and the Exposure Rate of 0.4 $\mu\text{R/hr}$ using NARAC Web Atmosphere and Diffusion Modeling System
Hay, T.R., Higley, K.A., Hamby, D.M.
Oregon State University

P.10 Comments on Basic Components in a Radiation Professional's Emergency Response Toolkit
McCord, M.
Howard University

Environmental

P.11 Measurement of Cs-137 Concentration in Various Lakes Located in the "downwind" Idaho Counties
Billa, J.K., Brey, R.R., Thackray, G.
Idaho State University, Pocatello

P.12 A Novel Air-cooling Distillation Device Made of Metal/Alloy for Environmental Water Tritium Analysis
*Fang, H.F., Chang, B-j.**
Institute of Nuclear Energy Research, Taiwan

P.13 LADTAP-PA-FTF: A Model for Estimating Dose Resulting from Groundwater Contamination at the Savannah River Site
Farfan, E.B., Jannik, G.T., Dixon, K.L., Lee, P.L., LaBone, E.D.
Savannah River National Laboratory

P.14 Assessment of Differences in Radionuclide Databases for CAP88 v. 1.0 and 3.0
LaBone, E.D., Farfan, E.B., Lee, P.L., Jannik, G.T.
University of South Carolina, Savannah River National Laboratory

P.15 Qualitative Assay of Radionuclide Species in Fly Ash and Bottom Ash from Coal Combustion
Hibbert, J., Zhang, R., Johnson, T.
Lone Star High School, Colorado State University

P.16 Water Quality Impacts of In-Situ Leach Uranium Mining
Coler, A., Ramsdell, H., Johnson, T.
Colorado State University

P.17 Exposure of Ionic Hyper-regulated Artemia to Chlorine 36 in a Marine System
Shaw, C., Higley, K.
Oregon State University

P.18 Feasibility Test for Optically Stimulated Luminescence (OSL) Dot Dosimeters for Environmental Monitoring
Timilsina, B., Gesell, T.
Idaho State University

P.19 Savannah River Site Meteorological Data for CAP88
Farfan, E.B., Lee, P.L., Jannik, G.T., Kabela, E.D., Weber, A.H., LaBone, E.D.
Savannah River National Laboratory

External Dosimetry

P.20 A Carbon Dioxide Pretreatment for Enhanced Neutron Response of Track Etch Detectors
Hulber, E., Selmeczi, D., Flynn, D., Taylor, C., Brennan, C., d'Errico, F.
Radosys Ltd, Hungary, Framework Scientific, Yale University

P.21 Verification of the PAGAT Polymer Gel Dosimeter by Photon Beams Using Magnetic Resonance Imaging
Hadad, K., Azadbakht, B., Hassan, Z.
Shiraz University, Iran, Baheshti University, Iran

Instrumentation

P.22 Tomorrow's Gamma-Ray Spectroscopy Technology: Transition Edge Sensors With 47 eV Energy Resolution at 103 keV
Sassi, E., Johnson, T., Ullom, J.N., Rabin, M.W.
Colorado State University, Fort Collins, NIST, Boulder, Los Alamos National Laboratory

P.23 Determination of Basic Dosimetric Properties of Annular Liquid Ionization Chambers (ALIC)
Acha, R., Wickman, G.
Idaho State University, Umea University

P.24 Superheated Drop Detectors with Enhanced Response to High Energy Neutrons
d'Errico, F., Flynn, D., Taylor, C., Brennan, C.*
Yale University, Framework Scientific

Internal Dosimetry and Bioassay

P.25 An Analysis of the Dependency of Whole-body Counting Efficiency on Specific Anatomy in Selected BOMAB and Tomographic Phantoms
Zhang, B.Q., Mille, M., Xu, X.G.
Rensselaer Polytechnic Institute, China Institute for Radiation Protection

P.26 USTUR Case 0102 Voxel Phantom for External Radiation Detector Response Simulation
Robinson, N., Brey, R., James, T.
Idaho State University, United States Transuranium and Uranium Registries

P.27 Fabrication of Human Organs for Realistic Calibration Phantoms by Rapid Prototyping
Mille, M., Xu, X.G.
Rensselaer Polytechnic Institute

P.28 An Updated Evaluation of Data from the 1980 Statistical Analysis of Plutonium in US Autopsy Tissue
Mecham, D., Brey, R., James, T., Shonka, J.
Idaho State University, United States Transuranium and Uranium Registries, Shonka Research Associates

P.29 Comparison of Dose Rate from Cosmic Ray Muons by MCNPX and FLUKA
Hadad, K., Piroozmand, A., Ayobian, N.
Shiraz University, Iran

P.30 Polonium-210 and Lead-210 as Biomarkers of Inhaled Cigarette Smoke
Schayer, S., Qu, Q., Wang, Y., Cohen, B.
New York University School of Medicine, Peking University Health Science Center, PRC

Medical

P.31 Effective Dose Measurement in Pain Clinic Using an Adult Male Anthropomorphic Phantom and Derivation of Dose Conversion Coefficient from Dose Area Product (DAP)
Kim, S., Toncheva, G., Anderson-Evans, C., Huh, B., Leithe, L., Yoshizumi, T.
Duke University

P.32 Skin Dose Measurements in Chest X-ray Examinations in Radiography Departments in Mashhad-Iran
*Bahrayni Toossi, M.T., Esmaili, S.**
Azad University - Sanandaj, Iran

P.33 Fluoroscopy Dose Estimate Reporting Methods
Brown, K., Anderko, C., Skelton, W.
Geisinger Health System

P.34 Costs Associated with the Release of Materials Contaminated with Short Lived Radionuclides from Outpatients
LaMastra, A.
Health Physics Associates, Inc.

P.35 Evaluation of Noise Smoothing Technique and Digital Image Filtering
Shafeiyan, S., Zahmat Kesh, M.H., Sardari, D.
Azad University, Iran, Novin Medical Institute

Operational Health Physics

P.36 Monte Carlo Simulation of Exposure Rate of a Single Cs-137 Source Irradiator: Comparisons of Exposure Rate between MCNP Calculated Values and the Measurements and Study of Exposure Rate Distribution using Mesh Tallies
Wen, X.
University of Cincinnati

P.37 An Academic Exercise in Neutron Shielding
Peckham, Z., Kunze, J., Brey, R.
Idaho State University

P.38 Summary of Recent Numerical Solutions Concerning Measurements of Radioactivity When the Blank is Counted an Integer Times Longer than the Sample
Potter, W., Strzelczyk, J.
Consultant, University of Colorado Health Science Center

P.39 Relative Performance of Hand Held Instruments in Varying Temperature Conditions
Brown, K., Forrest, R., Mahoney, A., Landsworth, R., Sturchio, G.*
University of Pennsylvania, Mayo Clinic

P.40 Multi-Agency Radiation Survey and Assessment of Materials and Equipment Manual
Ramachandra, B., Bias, C-A., Alberth, D., Doremus, S., Williams, A., Snead, K., Azzam, N., Petullo, C., Meck, R., Powers, G.*
US Air Force, US Army, US Navy, US Department of Energy, US Environmental Protection Agency, US Public Health Service, US Nuclear Regulatory Commission

P.41 Evaluating the Efficiency of Decon Gel 1101 on Removal of Cs-137, Co-60, and Eu-154 on Common Commercial Materials
VanHorne-Sealy, J., Higley, K.
Oregon State University/US Army, Oregon State University

Regulatory/Legal Issues

P.42 A New Family of Type B Radioactive Material Transport Packages
Ortensi, J., Miller, J.
International Isotopes, Inc.

Risk Analysis

P.43 A Review of the Current Literature Regarding the Science, Technology, and Risk of Food Irradiation and its Comparison Against Other Forms of Food Decontamination and Preservation Technologies
Le, M.
ChemRisk, Inc.

Waste Management

P.44 Uncovering "A Radioactive Cover-Up"
Gallagher, R.G.
Applied Health Physics, Inc.

International Posters

P.45 Beta Ray Scintillation Detector Using the Rugged Scintillator
Yamano, T., Hara, M., Minagawa, E.
Aloka Co.,Ltd, Japan

P.46 Environmental Radiometric Monitoring Around ENEA Research Center of Saluggia for the Resident Population Health Safety
Arginelli, D., Ridone, S., Bortoluzzi, S., Montalto, M., Nocente, M., Vigna, L.
Research Centre of Saluggia, Italy, University of Studies of Turin, Italy

P.47 Biokinetic and Dosimetric Study of [⁹⁰Y]-Ibritumomab Tiuxetan in Non-Hodgkin's Lymphomas Radioimmunotherapeutic Treatment: A Project Proposal
Arginelli, D., Inglese, E., Matheoud, R., Ridone, S., Secco, C., Vigna, L.
Research Centre of Saluggia, Italy, Hospital "Maggiore della Carità" of Novara and University of Studies of Eastern Piedmont "Amedeo Avogadro", Italy, University of Studies of Turin, Italy

P.48 *In-Vivo* Stability and Kinetic Study of Radiopharmaceutical [¹⁵³Sm]Sm-EDTMP in Metabolic Radiotherapy of Painful Bone Metastases
Arginelli, D., Baiocco, C. Inglese, E., Matheoud, R., Montalto, M., Nocente, M., Ridone, S., Rudoni, M., Secco, C., Vigna, L.
Research Centre of Saluggia, Italy, Hospital "Maggiore della Carità" of Novara and University of Studies of Eastern Piedmont "Amedeo Avogadro", Italy, University of Studies of Turin, Italy . .

P.49 Dose to Some of the Critical Organs Due to Screen Film Mammography - Basis of Indian Data
Chhokra, K., Jayalakshmi, V., Sharma, R.
Atomic Energy Regulatory Board, India, Bhabha Atomic Research Centre, India

P.50 Promotion of Radiation Safety in Hospital-Based Cyclotron Facilities in Taiwan – Via the Establishment of the "Taiwanese Society of Medical Cyclotron"
Kao, C-H.K.
Buddhist Tzu Chi General Hospital, Tzu Chi College of Technology, Taiwan

P.51 Activity Concentrations of Radionuclides in Water and Sediments of Euphrates River and the Radiation Dose Due to Consumption this Water.

Kubaisi, K.A., Sabbar, S.A.

HazMat-Ministry of Science and Technology, Iraq

P.52 Use of Ground Radiometric Measurements in Investigation of Karsts Bauxite in Western Desert - Iraq

Kubaisi, K.A.

Ministry of Science and Technology, Iraq

P.53 Next Generation of Germany's Safety Gamma Dose Rate Measurement Net

Luff, R., Stöhlker, U., Harms, W., Thoma, J., Wolfert, J., Bleher, M.

Federal Office for Radiation Protection, Germany

P.54 Analysis of Radiation Risk Perception by University Faculties and Students in Nagasaki

Miura, M., Morita, N., Takao, H., Yoshida, M., Matsuda, N.

Center for Frontier Life Sciences, Nagasaki University, Japan

P.55 Use of a Whole Body Counter in Radiation Risk Management for University Faculties and Students

Morita, N., Takamura, N., Yamashita, S., Shimasaki, T., Yoshida, M., Matsuda, N.

Nagasaki University, Japan, Kumamoto University, Japan

P.56 Improvement of the Image in Diagnostic Radiology

Castelo e Silva, L., Prado, N., Teixeira, M.

Instituto Militar de Engenharia, Brasil

P.57 Investigation of Electron Contamination for Bhabhatron-II Telecobalt Machine

Sahani, M.K., Dash Sharma, P.K., Chhokra, K., Agarwal, S.P., Kher, R.K.

Atomic Energy Regulatory Board, India, Bhabha Atomic Research Centre, India

P.58 Investigation of Molecular-Dynamic Characteristics of Herbs Depending on the Place of Their Growth by the Method of IR-Spectroscopy

Shukurov, T., Dzhuraev, A.A., Khaitova, Z.M., Dzhuraev, A.A., Marupov, R.

Academy of Sciences of the Republic of Tajikistan, Tajikistan

P.59 Interstitial Laser Photocoagulation of Uterine Myomas with a Neodymium Yttrium Aluminum Garnet (Nd:YAG) Laser

Taha, T.F., Hussein El-Noury, M.A., Azmy, O., Eldin, A.G.

National Research Center, Egypt, Cairo University, Egypt

P.60 H*(10) from Industrial ¹³⁷Cs Sources

Rodríguez-Juarez, R., Vega-Carrillo, H.R., Manzanares-Acuña, E., Hernández-Dávila, V.M., Salas-Luevano, M.A.

Apdo, Mexico, UA de Estudios Nucleares de la Universidad Autonoma de Zacatecas, Mexico

P.61 X-Ray Spectra from a Mamographic Unit

Vega-Carrillo, H.R., Manzanares-Acuña, E., Hernández-Dávila, V.M., Salas-Luevano, M.A.

Apdo, Mexico, UA de Estudios Nucleares de la Universidad Autonoma de Zacatecas, Mexico

3:00-5:00 PM

401/402

MPM-A: External Dosimetry

Co-Chairs: Gus Potter, Mark Fishburn

3:00 PM

MPM-A.1

Intercomparison on Measurements of the Quantity Personal Dose Equivalent Hp(d) by Active Personal Dosimeters

Cruz Suarez, R.

IAEA, Austria

3:15 PM

MPM-A.2

Calculation of Build-up for a 20MeV Collimated Bremsstrahlung Beam

Shannon, M., Hertel, N., Norman, D., Jones, J.

Georgia Tech, Idaho National Laboratory

3:30 PM

MPM-A.3

Characterization of a [¹³⁷Cs] Irradiator from a New Perspective with Modern Dosimetric Tools

Brady, S.L., Toncheva, G., Dewhirst, M., Yoshizumi, T.

Duke University

3:45 PM

MPM-A.4

Evaluation of Dose from the University of Cincinnati Sub-Critical Reactor

Hawari, M., Sandwall, P., Valentine, J., Amoush, A., Spitz, H., Maldonado, I.*

University of Cincinnati, University of Tennessee, Knoxville

4:00 PM

MPM-A.5

Improving the Performance of a Tissue Equivalent Proportional Counter to High Energy Heavy Ions using Gases with High Multiplication Factors

Manglass, L.M., Borak, T.B.

Colorado State University

4:15 PM

MPM-A.6

New Series of LiF:Mg,Cu,P Extremity Dosimeters

Luo, L., Velbeck, K.

Thermo Fisher Scientific

4:30 PM

MPM-A.7

MCNP Modeling of the DT-702 TLD and Ionization Chambers Response to Cs-137

Hayashi, J., Benevides, L., Nelson, M.

US Naval Academy, Naval Dosimetry Center

4:45 PM

MPM-A.8

Verification of Dose Rate and Energy Dependence of PAGAT Polymer Gel Dosimeter Using Photon Beams

Hadad, K., Azadbakht, B., Sahmatkesh, H.

Shiraz University, Iran, Beheshti University

3:00-4:45 PM

403/404

MPM-B: Homeland Security

Co-Chairs: Nick Bates, Paul Stansbury

3:00 PM

MPM-B.1

US DOE/NNSA Search and Secure Program

Mac Kenzie, C., Walker, S., Kahn, R.

LLNL/DOE/NNSA, Sandia National Laboratory, Argonne National Laboratory

3:15 PM **MPM-B.2**
Repatriation of US Radioactive Sources from Brazil
Tompkins, J.A., Mourao, R., Leonard, S.
LANL - OSR Project, CDTN-CNEN, IAEA

3:30 PM **MPM-B.3**
Modeling Human Response to Nuclear Effects as a Function of Systems, Signs, and Symptoms
Curling, C., Disraelly, D., Kriss, A.*
Institute for Defense Analyses

3:45 PM **MPM-B.4**
Primary Beam Dose Dependence on Distance from Cargo and People Scanners
Strom, D.J., Cerra, F.
Pacific Northwest National Laboratory, National Institute of Standards and Technology

4:00 PM **MPM-B.5**
Development of Radioprotectant Caches in the State of Florida
Lanza, J.J.
Florida Department of Health

4:15 PM **MPM-B.6**
Use of Portable Survey Meters for Rapid Assessment of Internal Contamination Monte Carlo Simulations Using the UF Hybrid Reference Adult Phantoms
Hurtado, J., Lee, C., Bolch, W.
University of Florida

4:30 PM **MPM-B.7**
Emergency Concentrations of Radioactivity in Food and Water for 10-Day Ingestion
Brodsky, A.
Georgetown University

3:00-5:15 PM **406**

MPM-C: Regulatory/Legal Issues

Co-Chairs: Tom LaBone, Matt McFee

3:00 PM **MPM-C.1**
The Gap in Regulation of Industrial Radiation Machines
Brandon, T.
IRSC, Inc.

3:15 PM **MPM-C.2**
Mammography Quality Assurance: Dual Regulation and the Need for Increased Oversight
Brown, K., Anderko, C., Snyder, D.
Geisinger Health System

3:30 PM **MPM-C.3**
Differences in Agreement States' Implementation of Regulations
Chapel, S.
IRSC Inc.

3:45 PM **MPM-C.4**
Agreement State Experience in Re-Licensing of a Conventional Uranium Mill.
Egidi, P.V.
Colorado Department of Public Health and Environment

4:00 PM **MPM-C.5**
Transportation Regulations and Radiation Safety
Brown, D., Woods, S.
Halliburton Energy Services, Inc.

4:15 PM **MPM-C.6**
Assessment of Regulatory Requirements for Operating Active Interrogation Systems in Support of National Security Applications
Shannon, M., Hertel, N., Norman, D., Jones, J.
Georgia Tech, Idaho National Laboratory

4:30 PM **MPM-C.7**
Licensing and Compliance of Dosimetry Services in Canada
Rickard, M.
Canadian Nuclear Safety Commission (CNSC)

4:45 PM **MPM-C.8**
Networking: An Efficient Tool for the Implementation of the IAEA Standards
Cruz Suarez, R.
IAEA, Austria

5:00 PM **MPM-C.9**
Review of Standards of Protection for Pregnant Workers and their Offspring
Cruz Suarez, R.
IAEA, Austria

3:15-5:00 PM **407**

MPM-D: Operational Health Physics I

Co-Chairs: Tara Medich, Jay Tarzia

3:15 PM **MPM-D.1**
The Decision- Making Process in Determining the Fate of a Historical Cyclotron
Hamawy, G.
Columbia University

3:30 PM **MPM-D.3**
Safety Concerns During the Repair of Penn State's Breazeale Nuclear Reactor Pool
Linsley, M.
Penn State University

3:45 PM **MPM-D.4**
Calibration of Low-Energy Photon Emitting Irradiator Systems
Wagoner, D.A.
Savannah River Site, Francis Marion University

4:00 PM **MPM-D.5**
ALARA Analysis of Skyshine Dose for a Bulk Vitrification Demonstration Project
Ikenberry, T.A., Brown, R.L., Leonard, M.W.
Dade Moeller & Associates, CH2M Hill Hanford Group

4:15 PM

MPM-D.6

Decontamination of Medical Radioisotopes from Hard Surfaces using Peelable Polymer-Based Decontamination Agents

Draine, A.E., Walter, K.J., O'Neill, M.P., Edgington, G.J., Johnson, T.E.

Colorado State University, Cellular Bioengineering, Inc.

4:30 PM

MPM-D.7

Decontamination of Cs-137, Pu-239, and Am-241 from Hard Surfaces using a Peelable Polymer-based Hydrogel

Edgington, G.J., O'Neill, M.P., Holt-Larese, K.C.*

Cellular Bioengineering, Inc., Sandia National Laboratories

4:45 PM

MPM-D.8

CRCPD's Source Collection and Threat Reduction Program

Winston, J.P.

CRCPD Chair Elect and Healing Arts Council Chair

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 Pittsburgh, PA, 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 June 23, 2008.

Once these forms are received, a résumé number will be issued and inserted on side one and two. By June 30, 2008, 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."

TUESDAY

7:00-8:00 AM **406**

CEL 3 Spend a Little, Save a Lot! How Lightning Strike Detection Technology Supports Company and Community Activities

James M. Hylko

Paducah Remediation Services, LLC

7:00-8:00 AM **407**

CEL 4 The Life Cycle of a Trend

Steve Prevette

Fluor Hanford, Inc.

8:30 AM-Noon **401/402**

TAM-A: Environmental I

Co-Chairs: Matthew Barnett, Linnea Wahl

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

The Transfer of Cl-36 from Soil to Plant and the Potential for Phytoremediation

Bytwerk, D., Higley, K.A.

Oregon State University

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

A Comprehensive Study of the Depth Profile of Cs-137 in Surface Soils at the Idaho National Laboratory

Giles, J.R., Oertel, C.P., Reynolds, B.D.

Idaho National Laboratory

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

Independent Evaluation of Early Airborne Plutonium Releases from Los Alamos National Laboratory

Widner, T., Shonka, J., O'Brien, J.

ChemRisk, Inc., Shonka Research Associates

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

Examination of Results of Measurements of Plutonium in Human Tissue Samples from Past Residents of Los Alamos, New Mexico as Potential Sources of Information about Early Airborne Releases from Los Alamos Facilities

Widner, T., Shonka, J., O'Brien, J., Donovan, E., Gaffney, S.*

ChemRisk, Inc., Shonka Research Associates

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

Reconstruction of the Radionuclide Activities for the Low Level Radwaste Drums Stored in Taiwan

*Wang, T-W., Tsai, T-L., Chang, B-j.**

Institute of Nuclear Energy Research, Taiwan, National Tsing Hua University

9:45 AM **BREAK**

10:15 AM **TAM-A.6**

Influence of Present Dosimetry Data on Derived Concentration Guides

Raabe, R.L., Eckerman, K.F.

Oak Ridge National Laboratory

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

Effective Lifetime of a Charcoal Filter for Controlling Radioiodine Stack Emissions

Wahl, L.

Lawrence Berkeley National Lab

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

Self-Absorption Study Results of Gelman Versapor 3000 Filters Used in Air Sampling

Barnett, J.M.

Pacific Northwest National Laboratory

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

Influence of Dampers on the Results of Air Sampler Qualification Tests

Glissmeyer, J.

Battelle Northwest

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

Optimization of Environmental Radiation Monitoring for Nuclear Power Plants

Fang, H-F., Chang, B-j., Tsai, T-L.*

Institute of Nuclear Energy Research, Taiwan

11:30 AM **TAM-A.11**

Measurement of Uranium Uptake by Agricultural Crops in Jordan

Al Khahrouf, S., Dababneh, M.S., Al-Hamarneh, I.N.

Royal Scientific Society, Jordan

8:30 AM-Noon **403/404**

TAM-B: Special Session: Radiological Hazard Assessment, Medical Response, and Emergency Planning Software Tools

Co-Chairs: Tom O'Connell, Kyle Millage

8:30 AM **Introduction**

O'Connell, T., Millage, K.

Hazard Assessment Tools

Co-Chairs: Tom O'Connell, Kyle Millage

8:40 AM **TAM-B.1**

Hazard Assessment Modeling Tools of the National Atmospheric Release Advisory Center

Nasstrom, J., Sugiyama, G., Baskett, R.

Lawrence Livermore National Laboratory

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

Hazard Predication and Assessment Capability (HPAC): A Software Application for Modeling the Effects of Hazardous Material Releases

Millage, K., McClellan, G., Nelson, E.

Applied Research Associates, Inc., Defense Threat Reduction Agency

9:20 AM **TAM-B.3**

Hotspot Health Physics Code for Hazard Assessment Modeling

*Homann, S., Nasstrom, J.**

Lawrence Livermore National Laboratory

9:40 AM **TAM-B.4**

Radiological Emergency Response Planning and Exercise using Hotspot Health Physics Codes

Buddemeier, B., Homann, S., Nasstrom, J.

Lawrence Livermore National Laboratory

10:00 AM **BREAK**

Biological Response and Dosimetry Tools

Co-Chairs: Tom O'Connell, Ed Waller

10:30 AM **TAM-B.5**
Combined Human Response Nuclear Effects Model (CHRNEM)
Curling, C., Disraelly, D., Kriss, A.
Institute for Defense Analyses

10:50 AM **TAM-B.6**
Radiation Induced Performance Decrement (RIPD) and RIPD Lethality and Injury Probability Interpolation (RIPDLIPI): Software Applications for Predicting Casualties from Protracted Radiation Exposure
McClellan, G., Millage, K., Nelson, E.
Applied Research Associates, Inc., Defense Threat Reduction Agency

11:10 AM **TAM-B.7**
AFRRI's Radiation Training and Assessment Tools CDROM Supporting Medical Management Response for Radiation Casualty Incidents
Mercier, J.R., Dickerson, W.E., Ross, J.A., Sandgren, D.J., Blakely, W.F.*
Uniformed Services University, Armed Forces Radiobiology Research Institute

11:30 AM
Speaker Panel: Modeling Limitations/Audience Questions

Poster

Miscellaneous Software Applications of Interest to RN Emergency Responders and Planners
Waller, E.
University of Ontario Institute of Technology

8:30 AM-Noon **405**

Movies

8:30-9:45 AM **406**

TAM-C1: Reactor Health Physics

Co-Chairs: Matthew Arno, Carl Tarantino

8:30 AM **TAM-C1.1**
Neutron Transmission Measurements Through Novel Nanoparticle Shielding Material
Burgett, E., Hertel, N., Harrison, C., Grulke, E.
Georgia Institute of Technology, University of Kentucky

8:45 AM **TAM-C1.2**
Hot Cell Testing of Highly Irradiated Reactor Components
Freyer, P.
Westinghouse Electric Company

9:00 AM **TAM-C1.3**
Airborne Tritium (3H) Recapture in Frost at a Nuclear Power Reactor
Harris, J., Miller, D.
Idaho State University, University of Illinois at Urbana-Champaign

9:15 AM **TAM-C1.4**
Why Nuclear?
Cioletti, J., Rajkovich, C.
Westinghouse Electric, LLC.

9:30 AM **TAM-C1.5**
The Nuclear Power Renaissance; A Case for Local Environmental Health Specialist Involvement
Sprau, D., Robinson, L.
East Carolina University

9:45 AM **BREAK**

10:15 AM **305**

Reactor Section Business Meeting

10:15 AM-Noon **406**

TAM-C2: Accelerator

Co-Chairs: Kamran Vaziri, Henry Kahnhauser

10:15 AM **TAM-C2.1**
A Review of High-Energy Dose Conversion Coefficients
Hertel, N.
Georgia Institute of Technology

10:45 AM **TAM-C2.2**
Monitoring of Cf-252 Fission-Fragment Effluents
Baker, S., Moore, F., Munyon, W.
Argonne National Laboratory

11:00 AM **TAM-C2.3**
Activation of Air Linear Accelerator Facilities
Caracappa, P.F., Singh, R., Marsh, D.
Rensselaer Polytechnic Institute

11:15 AM **TAM-C2.4**
Skyshine Radiation due to the Colorado State University Veterinary Medical Center Trilogy Accelerator
Elder, D.H., Harmon, J.F., Borak, T.B.
Colorado State University

11:30 AM **TAM-C2.5**
Gold Fission Cross Section Measurements with High Energy Neutrons
*Walker, L., Hill, T., Tovesson, F.**
Los Alamos National Laboratory

11:45 AM **TAM-C2.6**
Applications of Laser Compton Scattered X-rays to Fissionable Materials Identification and Imaging
Naeem, S., Wells, D., Chouffani, K.
Idaho State University

Noon **Accelerator Section Business Meeting**

8:30 AM-Noon **407**

TAM-D: Special Session: AAHP - Radiation Accidents and Incidents—Lessons Learned

Co-Chairs: Ed Maher, Steve Rademacher

8:30 AM
Introduction and Session Goals
Ed Maher

8:45 AM **TAM-D.1**
Nuclear Weapons Accidents - Lessons Learned I
*Groves, K., Taschner, J., Rademacher, S.**
S2 Sevorg Services, LLC, Air Force Safety Center

9:30 AM **TAM-D.2**
Nuclear Weapons Accidents - Lessons Learned II
Groves, K., Taschner, J., Rademacher, S.
S2 Sevorg Services, LLC, Air Force Safety Center

10:15 AM **BREAK**

10:45 AM **TAM-D.3**
Lessons Learned from Radiological Events at Los Alamos National Laboratory
Bliss, J., Somers, W., Costigan, S., Hoover, P.
Los Alamos National Laboratory

11:15 AM **TAM-D.4**
Medical Radiation Accidents - Lessons Learned
Walker, W.
Oncology Med, Inc.

8:45-11:45 AM **408/409**

TAM-E: Medical Health Physics I

Co-Chairs: Tara Medich, Dave Medich

8:45 AM **TAM-E.1**
A Fluoroscopy Safety Program to Reduce the Risk of Patient Injury
Anderko, C., Brown, K.
Geisinger Health System

9:00 AM **TAM-E.3**
Interventional Radiology - Time to Revisit the Lens Dose Equivalent Limits?
Dauer, L., Thornton, R., Balter, S., Williamson, M., Altamirano, J., Rothenberg, L., St. Germain, J.
Memorial Sloan-Kettering Cancer Center

9:15 AM **TAM-E.4**
Craniosynostosis Radiation Dose Measurements from a 320 Slice Computed Tomography Scanner
Etnire, R.T., Orrison, W.W., Hanson, E.H., Patton, P.W.
University of Nevada, Las Vegas, Nevada Imaging Centers, Amigenics

9:30 AM **TAM-E.5**
Internal Electron and External Photon Skeletal Dosimetry for the UF Hybrid Computational Newborn Phantom
Pafundi, D., Johnson, P., Lee, C., Rajon, D., Lodwick, D., Bolch, W.
University of Florida, Gainesville

9:45 AM **BREAK**

10:15 AM **TAM-E.6**
Size Adjustable Worker Models for Improved Radiation Protection Dosimetry
Zhang, J.Y., Na, Y.H., Xu, X.G.
Rensselaer Polytechnic Institute

10:30 AM **TAM-E.7**
Measurement of Scattered Radiation: Comparison of a 320-Slice to a 16-Slice and 64-Slice CT Scanner With and Without Shielding
Davis, J.E., Orrison, W.W., Hanson, E.H., Cadwalader, J.A., Patton, P.W.

University of Nevada, Las Vegas, Nevada Imaging Centers, Amigenics, Worldwide Innovations & Technologies, Inc.

10:45 AM **TAM-E.8**
Comparison of Main Software Packages for CT Dose Reporting
Gu, J.W., Dorgu, A., Xu, X.G.
Rensselaer Polytechnic Institute

11:00 AM **TAM-E.9**
Comparison of Computed Tomography Shielding Methods
Jackson, A., Blechinger, J.
Henry Ford Health System

11:15 AM **TAM-E.10**
A Preliminary Study to Assess Dose to Pregnant Females and Fetuses Undergoing CT Examinations
Gu, J.W., Taranenko, V., Bednarz, B., Caracappa, P., Xu, X.G.
Rensselaer Polytechnic Institute

11:30 AM **TAM-E.11**
Evaluation of Photon and Neutron Activations during Radiation Treatments
Han, B., Bednarz, B., Danon, Y., Xu, X.G.
Rensselaer Polytechnic Institute

11:45 AM **Medical Section Business Meeting**

2:30-5:00 PM **401/402**

TPM-A: Environmental II

Co-Chairs: Joe Shonka, Robert Fjeld

2:30 PM **TPM-A.1**
An Examination of Cs and Sr Retardation Factors from Lysimeter Field Studies
Thompson, S.W., Fjeld, R.A.
Clemson University

2:45 PM **TPM-A.2**
Optimization of Microprecipitation as a Sample Preparation Method for Alpha Spectroscopy
Kelly, L.R., Stock, S., Patton, P.W., Sudowe, R.
University of Nevada Las Vegas

3:00 PM **TPM-A.3**
Study of the Subsurface Radiation Environment in the Canadian Arctic
Colvin, E., Hertel, N., McKay, C.
Georgia Institute of Technology, NASA Ames Research Center

3:15 PM **TPM-A.4**
Electret Ion Chamber Based Radon Flux Monitor, a Tool for Cost and Time Efficient Uranium Exploration
Kotrappa, P., Stieff, L., Stieff, F.
Rad Elec Inc.

3:30 PM **TPM-A.5**
Autoradiography Image Processing Method for Spectral-Spatial Analysis
Zeissler, C. J.
National Institute of Standards and Technology, Gaithersburg

3:45 PM **BREAK**

4:15 PM **TPM-A.6**
Next Generation of the German Gamma Dose Rate Monitoring Network
Stoehlker, U., Luff, R., Harms, W., Thoma, J., Wolfert, J., Bleher, M.
German Radiation Protection Office

4:30 PM **TPM-A.7**
The Schauinsland Intercalibration Facility
Stoehlker, U., Bleher, M.
German Radiation Protection Office

4:45 PM **TPM-A.8**
Radioactivity in Drilled and Dug WWII Drinking Water of Ogun State Southwestern Nigeria and Consequent Dose Estimates
Ajayi, O., Achuka, A.
Federal University of Technology, Nigeria

2:30-5:30 PM **403/404**

TPM-B: Special Session: Radiological Hazard Assessment, Medical Response, and Emergency Planning Software Tools

Co-Chairs: Tom O'Connell, Glen Reeves

Medical Response and Planning Tools

2:30 PM **TPM-B.1**
AFRRI's First-Responder Radiological Assessment Triage (FRAT) Software Application Supporting Medical Recording and Triage Dose Assessment During Radiation Casualty Incidents
Blakely, W.F., Levine, I.H., Sandgren, D.J.
AFRRI

2:50 PM **TPM-B.2**
AFRRI's Biodosimetry Assessment Tool (BAT) Software Application Supporting Medical Recording during Radiation Casualty Incidents
Blakely, W.F., Levine, I.H., Sandgren, D.J.
AFRRI

3:10 PM **TPM-B.3**
Software to Assist Medical Personnel and First Responders in Determining Appropriate Triage and Treatment for MEDical DECORporation of Internalized Radionuclides
Waller, E., Wilkinson, D.
University of Ontario Institute of Technology, Defence R&D Canada Ottawa

3:30 PM **BREAK**

3:45 PM **TPM-B.4**
Medical Nuclear, Biological and Chemical Casualty and Resource Estimation Support Tool (NBC CREST): A Software Application for Medical Planning and Response
McClellan, G., Bergman, J., Nelson, E.
Applied Research Associates, Inc., Defense Threat Reduction Agency

4:05 PM **TPM-B.5**
Computer Tools to Assist Health Care Providers and Other Professionals in Treating Victims of an Event Involving Radiation
Miller, C.W., Nemhauser, J.B., Whitcomb, Jr., R.C., McCurley, C.M., Ansari, A., Jones, R.L.
Centers for Disease Control and Prevention (CDC)

4:25 PM
Speaker Panel: Modeling Limitations/Audience Questions

4:40 PM
Panel Discussion: Software Application to Scenarios, Medical and HP Perspectives
O'Connell, T., Buddemeier, B., Reeves, G.

2:30-5:00 PM **405**

Movies

2:30-5:00 PM **406**

TPM-C: NESHAPs - Rad Air

Co-Chairs: Matthew Barnett, Gustavo Vazquez

The NESHAP - Rad Air meeting is an open opportunity for individuals to meet with regulators and Department of Energy staff and discuss radioactive air emissions programs across the country. The meeting primarily focuses on Department of Energy sites and compliance with the Subpart H requirements for radioactive air emissions. It also includes relevant discussion on ANSI/HPS N13.1 for sampling at a well mixed location. Current topics include status of the ISO comparable standard to N13.1, CAP88 runs and surrogate isotopes, and compliance status of facilities to the standards.

2:30-5:15 PM **407**

TPM-D: Special Session: AAHP - Radiation Accidents and Incidents—Lessons Learned

Co-Chairs: Ed Maher, Steve Rademacher

2:30 PM **TPM-D.1**
Communicating Radiological Risks
Denton, H.
Retired, Knoxville, TN

3:15 PM **TPM-D.2**
Psychosocial and Communications Issues: Lessons Learned
Becker, S.M.
University of Alabama at Birmingham School of Public Health

3:45 PM **BREAK**

4:15 PM **TPM-D.3**
An Internal Contamination Experience and the Effects on Academic Research
Ring, J.
Harvard University

4:45 PM **Roundtable Discussion**

5:15 PM **407**

AAHP Open Meeting

TPM-E: Operational Health Physics II

Co-Chairs: Nolan Hertel, Liz Brackett

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

A Simple Demonstration of Overdispersion

*Jenkins, P.**Bowser-Morner, Inc.***2:45 PM** **TPM-E.2**

Tritium Counting Efficiency of Glass Fiber Vs. Polytetrafluoroethylene Filters

*Dailey, A.**Clemson University, Savannah River Site***3:00 PM** **TPM-E.3**

Probabilistic Model Evaluation of Continuous Air Monitor Response Relative to Protection Goals

*Whicker, J., Justus, A.**Los Alamos National Laboratory***3:15 PM** **TPM-E.4**

Doing More with Existing Personnel: The Yale University OEHS Safety Advisor

*Charbonneau, K., Fontes, B.**Yale University***3:30 PM** **BREAK****4:00 PM** **TPM-E.5**

The New Health Physics Option in the NRE Masters Degree at Georgia Tech

*Burgett, E., Hertel, N.***Georgia Institute of Technology***4:15 PM** **TPM-E.6**

Pee Dee Physics Day: A Student-Led Attempt to Increase HP Undergraduate Recruitment

*Penland, S., Gause, S., Kusserow, D., Capps, J.**Francis Marion University***4:30 PM** **TPM-E.7**

Lawrence Livermore National Laboratory Support for the NNSA Sister Laboratory Arrangements Program LLNL-PRES-401362

*Sprague, D., Jones, G.**Lawrence Livermore National Laboratory (LLNL)***4:45 PM** **TPM-E.8**

International Atomic Energy Agency Efforts on National Strategies for Regaining Control over Orphan Sources

*Reber, E., Friedrich, V., Dodd, B.**International Atomic Energy Agency, BDConsulting*

WEDNESDAY

7:00-8:00 AM 406

CEL 5 Uncertainty Assessment in Atmospheric Dispersion Computations
Erno Sajo
Louisiana State University

7:00-8:00 AM 407

CEL 6 Looking at the Big Picture
Andy Karam
Karam Consulting LLC

8:30 AM-Noon 401/402

WAM-A: Special Session: Environmental Issues Associated with the Resurgence of Uranium Recovery Operations

Co-Chairs: Craig Little, Bob Meyer

8:30 AM
Introduction

8:45 AM WAM-A.1
Global Trends in Uranium Resource Development
Feasby, D.G., Chambers, D.B., Lowe, L.M
SENES Consultants Limited

9:15 AM WAM-A.2
Environmental Issues Associated with In Situ Uranium Recovery
Griffin, M.
Uranium One Americas

9:45 AM BREAK

10:15 AM WAM-A.3
Radon Gas and Progeny Emissions from High Grade Uranium Mines
Seier, M., Toews, K.
Cameco Corporation

10:45 AM WAM-A.4
The New Generation of Uranium In Situ Recovery Facilities: Design Improvements Should Reduce Radiological Impacts
Brown, S.H.
SHB, Inc.

11:15 AM WAM-A.5
Advances in Uranium Recovery Facility Characterization Techniques - Compliance with Nuclear Regulatory Commission Regulatory Guide 4.14
Whicker, R.
Tetra Tech

11:45 AM WAM-A.6
Adventures in Public Information: A Uranium Case Study
Johnson, J.A., Brown, S.H., Johnson, T.
Tetra Tech, SHB, Inc., Colorado State University

2:30 PM 305

Environmental Section Business Meeting

8:30 AM-12:15 PM 403/404

WAM-B: Special Session: Emergency Response Modeling

Co-Chairs: Bill Rhodes, Rob Forrest

8:30 AM Introduction

8:45 AM WAM-B.1
Assessment of Emergency Response Planning and Implementation in the Aftermath of Major Natural Disasters and Technological Accidents
Milligan, P., Jones, J.
US Nuclear Regulatory Commission, Sandia National Laboratories

9:15 AM WAM-B.2
Impact of Prompt Effects on Response to an Improvised Nuclear Device Detonation in an Urban Area
Klennert, L.
Sandia National Laboratories

9:45 AM WAM-B.3
Improvements for Nuclear Terrorism Consequence Management Planning
Buddemeier, B., Dombroski, M., Wheeler, R., Maheras, S., Carnell, R.
Lawrence Livermore National Laboratory, Battelle

10:15 AM BREAK

10:45 AM WAM-B.4
Shelter-Evacuate Strategies and Consequences Following an Urban Nuclear Detonation
*Law, K., West, T., Brandt, L. *, Yoshimura, A.*
Sandia National Laboratories

11:15 AM WAM-B.5
Radiological Terrorism: Risks and Options
Connell, L.W.
Sandia National Laboratories

11:45 AM WAM-B.6
Radiological Dispersal Devices: Physically Based Dispersal Characteristics and Limitations
Harper, F.
Sandia National Laboratories

8:30 AM-Noon 405

Movies

8:45 AM-Noon 406

WAM-C: Medical Health Physics II

Co-Chairs: Elyse Thomas, Jan Braun

8:45 AM WAM-C.1
The Long Path of Tc-99m Production in North America
Cevera, M., Waller, E., Johnson, T.
Colorado State University, University of Ontario Institute of Technology

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

Nuclear Medicine Waiting Room Dose Rates
Williamson, M., Dauer, L.T., Casciotta, K., Strauss, H.W.
Memorial Sloan-Kettering Cancer Center

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

A 3-Year Review of a Thyroid Bioassay Program at a Large Cancer Hospital
Williamson, M.J., Dauer, L.T.
Memorial Sloan-Kettering Cancer Center

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

Increased Radiation Control for Simultaneous Therapeutic Iodine-131 and Hemodialysis Patient Treatments
Bryant, B.
University of Alabama at Birmingham

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

Effective Monitoring and Reduction of I-131 Effluent at a Medical Facility
*Burton, D., Massey, R., Quang, E.**
Walter Reed Army Medical Center

10:00 AM **BREAK**

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

Photochemical Delivery of Bleomycin in Malignant Glioma Cells
Blickenstaff, J.W., Vo, V., Hirschberg, H., Madsen, S.J.
University of Nevada, Las Vegas, University of California, Irvine

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

Selective Disruption of the Blood-brain Barrier by Photodynamic Therapy
Zhang, M.J., Chighvinadze, D., Hirschberg, H., Madsen, S.J.
University of Nevada, Las Vegas, University of California, Irvine

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

Dosimetry Characterization of a Multi-Beam Radiotherapy Treatment for Age-Related Macular Degeneration
Lee, C., Howell, R., Gertner, M., Chell, E., Hansen, S., Bolch, W.
University of Florida, University of Medicine & Dentistry of New Jersey, Oraya Therapeutics

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

Effect of Chemotherapy on the Spatial Distribution of Stem Cells in Human Bone Marrow
Kielar, K.N., Bolch, W.E., Shahlaee, A.H., Braylan, R.C.
University of Florida

11:30 AM **WAM-C.11**

Ocular Malignant Melanoma Radiation Dose Optimization
Ryan, M., Makinson, K.A., Cazalas, E.*
Oregon State University

11:45 AM **WAM-C.12**

Comparison Between Photodynamic Death of Cultured Melanoma and Melanocyte Cells using a Vital Stain and the Inflicted Biomolecular Damage using Synchrotron Infrared Microspectroscopy
Mamoon, A., Talaat, R., Martin, M., Bjornstad, K., Blakely, E.
Egyptian Atomic Energy Authority, Egypt, Menoufia University, Egypt, Lawrence Berkeley National Laboratory

8:30 AM-Noon **407**

WAM-D: Special Session: Pennsylvania's Radiological History I

Chair: David Allard

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

Pennsylvania's Atomic Trails and Tales
Allard, D.
Pennsylvania DEP/BRP

9:30 AM **WAM-D.2**

Marie Curie and Pennsylvania Radium
Lubenau, J.
Lititz, PA

10:30 AM **BREAK**

11:00 AM **WAM-D.3**

The Hartman Diaries & PA Radium (or, A 1920's Health Physicist)
Porter, Jr., S.W.
Porter Consultants, Inc.

2:30-4:45 PM **401/402**

WPM-A: Decommissioning

Co-Chairs: Jim Berger, Joe Shonka

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

Independent Verification Objectives and Recent Lessons Learned
Roberts, S., Abelquist, E.
Oak Ridge Associated Universities (ORAU)

2:45 PM **WPM-A.2**

Hot Spot Limits—A Closer Look at Dose Modeling used to Establish Hot Spot Release Criteria
Abelquist, E.W.
Oak Ridge Associated Universities (ORAU)

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

The Use of Parametric Statistics to Determine the Number of Samples Needed to Release a Site
Gaul, W.C., Jansen, W.G.
Chesapeake Nuclear Services, Project Enhancement Corp.

3:15 PM **WPM-A.4**

A Comparison of Prediction Equations for the Isotopic Distribution of Enriched Uranium and the Impact on the Determination of Decommissioning Criteria
Nardi, A.J.
ENERCON Services, Inc.

3:30 PM **WPM-A.5**

Selection of Statistical Tests as a Cost-Benefit Decision Tool for Radiological Remediation
Gaul, W.C., Jansen, W.G.
Chesapeake Nuclear Services, Project Enhancement Corporation

3:45 PM **BREAK**

4:15 PM **WPM-A.6**
The Preparation of Two DOE Authorized Limit Applications for the Release of Filter Medium for Regeneration
Ottley, D.B.
Fluor Hanford

4:30 PM **WPM-A.7**
Characterization of Activation Products in a Decommissioned Medical Cyclotron
Meyer, K., Moroney, R., Maldonado, D.
Areva Federal Services, Siemens Molecular Imaging, Inc.

4:45 PM **Decommissioning Section Business Meeting**

2:30-5:30 PM **403/404**

WPM-B: Special Session: Emergency Response Modeling

Co-Chairs: Bill Rhodes, Steve Musolino

2:30 PM **WPM-B.1**
Canadian Experimental and Modeling Projects for Radiological Dispersal Device Characterization
Erhardt, L., Brousseau, P., Roy, G., Andrews, W., Green, A., Fusina, G., Rao, G.
Defence R&D Canada, Ottawa, Valcartier and Suffield, Royal Military College of Canada

3:00 PM **WPM-B.2**
The US Department of Energy Emergency Response Assets for Radiological Consequence Management
Bowman, D.R.
US Department of Energy

3:30 PM **WPM-B.3**
The Relationship between Modeling and Field Response Activities during a Radiological Material Dispersal Event
Riland, C., Mena, R.
RSL-NELLIS

4:00 PM **BREAK**

4:30 PM **WPM-B.4**
Advances in NARAC/IMAAC Consequence Assessment Modeling of Airborne Hazards
Sugiyama, G., Nasstrom, J., Baskett, R.
Lawrence Livermore National Laboratory

5:00 PM **WPM-B.5**
Turbo FRMAC 2.0
Fulton, J.
Sandia National Laboratories

2:30-5:00 PM **405**

Movies

2:30-3:30 PM **406**

WPM-C1: Internal Dosimetry

Co-Chairs: Jim Griffin, Jay MacLellan

2:30 PM **WPM-C1.1**
Canadian National Internal Dosimetry Intercomparison Programme
Kramer, G.
Health Canada

2:45 PM **WPM-C1.2**
Health Effects of Internally Deposited Radionuclides
Raabe, O.
University of California, Davis

3:00 PM **WPM-C1.3**
Upgrading the United States Transuranium and Uranium Registries' Health Physics Database
McCord, S., James, A.
United States Transuranium and Uranium Registries

3:15 PM **WPM-C1.4**
Whole Body Reaction on the Local Irradiation as a New Conceptual Base for Safety Recommendations
Kapanadze, A.
Georgian National Cancer Center

3:45-5:15 PM **406**

WPM-C2: Nanotechnology

Co-Chairs: Scott Walker, Mark Hoover

3:45 PM **WPM-C2.1**
Review of Nanotechnology Safety
Dua, S., Mwisela-Rose, J.
Florida International University

4:00 PM **WPM-C2.2**
Nanomaterials: New Challenges in Environmental Health and Safety
Sun, C., Gallagher, R.
Health International Inc.

4:15 PM **WPM-C2.3**
Nanoparticle Issues for the Health Physicist: Insights from the NIOSH Nanotechnology Research Program
Hoover, M.D.
National Institute for Occupational Safety and Health

4:30 PM **WPM-C2.4**
An Overview of Current and Proposed Radioactive Nano
Walker, L.S.
Los Alamos National Laboratory

4:45 PM **WPM-C2.5**
Panel Discussion

Poster

Nanotechnology - Are We Ready?
Day, L., Walker, L.
Louisiana State University, CAMD, Los Alamos National Laboratory

2:30-3:30 PM **407**

WPM-D1: Special Session: Pennsylvania's Radiological History II

Chair: David Allard

2:30 PM **WPM-D1.1**
Radium on Film
Frame, P., Lubenau, J.
Oak Ridge Associated Universities, Lititz, PA

**WPM-D2: Special Session:
Military Health Physics**

Co-Chairs: Bob Cherry, Scott Nicholson

3:45 PM

Introduction

4:00 PM

WPM-D2.1

The Role of the Army Nuclear Medical Science Officer in the Global War on Terrorism

Melanson, M.A.

Radiological Hygiene Consultant to the Army Surgeon

4:15 PM

WPM-D2.2

US Air Force Health Physics operations in the US Central Command area of responsibility

Nichelson S.M., Martilla K.E., Pugh, D.L., Favret, D.J., Thomas, D.D., Dewey, S.C., Harcek, B.G.*

US Air Force

4:30 PM

WPM-D2.3

An Evaluation of First Responder Radiation Exposures Resulting from the 1960 Boeing Michigan Aeronautical Research Center Missile Fire at McGuire Air Force Base, New Jersey, as an Indicator of Future Exposure Risk

Chaparro, O., Smith, D., Rademacher, S., Thomas, D., Glover, S., Spitz, H.

Air Force Institute of Technology, Air Force Safety Center, Air Force Institute of Operational Health, University of Cincinnati

4:45 PM

WPM-D2.4

Transformational Integration of Health Physics and Bioenvironmental Engineering:

Nichelson, S.M., Mukota, T.J., Cagle, A.J.

US Air Force

5:00 PM

WPM-D2.5

Improved Nuclear Device or Radiological Dispersal Device Post-Attack Mass Casualty Triage and Treatment for Internal Exposure to Radioactive Materials

Martilla, K., Thomas, D., Rademacher, S., Johnson, C.

US Air Force

5:15 PM

WPM-D2.6

A Recap of the 1981-1985 Research Program to Assess How Acute Radiation Dose Signs and Symptoms Degrade Performance of Battlefield Tasks

Myers, P., Anno, G., McClellan, G., Young, R., Auton, D., Davidson, C.

US Army Retired, Pacific Sierra Research Corp, Defense Nuclear Agency, US Army Nuclear and Chemical Agency

HPS Business Meeting

**WPM-E: ADJUNCT TECHNICAL SESSION
Aerosol Measurements**

Chair: Morgan Cox

WPM-E.1

Representativeness of Air Samples

Hadlock, D.

Savannah River Site.

WPM-E.2

Progress Report on the Book "Radioactive Air Sampling Methods"

Maiello, M.L.

Wyeth Research

WPM-E.3

Update on the NIOSH Direct Reading Methods Initiative

Hoover, M.D.

National Institute for Occupational Safety and Health

WPM-E.4

Radiation Protection for Uranium Miners

Hoover, M.D., Howie, W.L., Miller, A.L.

National Institute for Occupational Safety and Health

WPM-E.5

Aerosol Phase-Space Tracking Using Radiation Transport Theory

Sajo, E.

Louisiana State University

WPM-E.6

A Review of Three New IEC Air Monitoring Standards: IEC 62302 for Noble Gas Monitoring, IEC 62303 for Tritium Monitoring, and IEC 60951 (Revision) for Reactor Emergency and Post-Accident Monitoring

Cox, M.

Consultant

WPM-E.7

Air Monitoring Evaluations at Los Alamos National Laboratory

Voss, T.

Los Alamos National Laboratory (LANL)

WPM-E.8

Potential Technology Enhancements for Air Monitoring

Desrosiers, A.

Dade Moeller & Associates

WPM-E.9

The Solution to Pu-241 Surface Contamination Values in Appendix D of 10 CFR 835: Exemption Relief Application

Chiou, H-C.

Washington TRU Solutions

WPM-E.10

Collection of PM 2.5 Air Samples using Harvard-Type Impactors for Elemental Analysis using NAA, XRF, and ECOC to Estimate Exposure of Children to Traffic-Associated Particulate Matter in an Urban Area with Intense Highway Traffic

Spitz, H., Glover, S., Lobaugh, M., Grinshpun, S.

University of Cincinnati

THURSDAY

7:00-8:00 AM **406**

CEL 7 Pu-238 Source Leak Event: Internal Dosimetry Considerations
Rob Jones
Pacific Northwest National Laboratory

7:00-8:00 AM **407**

CEL 8 The Most Powerful Tool for Effective Risk Communication - Active Listening
Ray Johnson
Dade Moeller & Associates Radiation Safety Academy Division

8:30-11:45 AM **401/402**

THAM-A: Instrumentation

Co-Chairs: Tim Kirkham, Bob Kellner

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

Development of a Low-Background Gamma Spectroscopy System Using HPGe and NaI(Tl) Detectors Operating in Anti-coincidence
Boyd, W., Sudowe, R.
US Environmental Protection Agency, Las Vegas, University of Nevada, Las Vegas

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

Preliminary Evaluation of a Portable Handheld Combined Gamma and Neutron Directional Isotopic Identifying Detector
Hayes, R.
Remote Sensing Lab

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

Supporting Your Emergency Response Organization - What Every Health Physicist Needs to Know About Instrumentation
Van Cleef, D.
Advanced Measurement Technology, Inc.

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

Recent Progress on the Fast and Accurate Measurement of Ambient Dose Equivalent H*(10) and Directional Dose Equivalent H'(0.07) with Pocket Sized Survey Meters
Iwatschenko-Borho, M.
Thermo Fisher Scientific

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

Detection of Radiation by Magnetic Fields a Novice Look
Kawabata, K.
Self Employed

9:45 AM **BREAK**

10:00 AM **THAM-A.6**

Health Physics Student Use and Testing of a New Portable Gamma Spectroscopy System
Simpson, D., Ngijoi-Yogo, E., Rundle, D., Barvitskie, T.
Bloomsburg University, eV Products

10:15 AM **THAM-A.7**

Verification of an Excel Program Modeling Photons Incident on Lead
Penland, S.L., Fulmer, P.C., Jokisch, D.W.
Francis Marion University

10:30 AM **THAM-A.8**

Using Shewhart Charts, An SPC Technique, in Assessing Portable Survey Detection Instrument Health
Brown, D.
Shaw Group

10:45 AM **THAM-A.9**

Design and Performance of a Personal Inhalation Dose Monitor for Security and Nuclear Power Applications
Sawyer, J., Iwatschenko-Borho, M.
Thermo Fisher Scientific

11:00 AM **THAM-A.10**

Proportional Counting of Tritium Gas Generated by Polymer Electrolyte Membrane (PEM) Electrolysis of Tritiated Water Standards
Soreefan, A., DeVol, T.
Clemson University

11:15 AM **THAM-A.11**

Performance of a Plastic Scintillation Based Tool Monitor used to Discriminate Between Naturally Occurring and Artificial Radionuclides
Pottinger, M., Iwatschenko-Bohro, M.
Thermo Fisher Scientific

11:30 AM **THAM-A.12**

Alternate Technique for Field Estimation of Uranium Enrichment
Favret, D., Gross, I., Meyers, S., Argo, W., Pugh, D.
Air Force Institute for Occupational Health, Oak Ridge National Laboratory, US Army 20th SUPCOM (CBRNE)

8:45-11:45 AM **403/404**

THAM-B: Emergency Planning/Response

Co-Chairs: Nick Bates, Eric Burgett

8:45 AM **THAM-B.1**

Effective Use of Medical Countermeasures for Public Health Emergencies Involving Radiation
Miller, C.W., Adams, S.A., Whitcomb, Jr., R.C., Jones, R.L.
Centers for Disease Control

9:00 AM **THAM-B.2**

Radiological Emergency Management: Managing Resources & Targeting Efforts in Light of New Technologies and Protective Action Guidance
Silvers, J.
US Air Force, Eglin, FL

9:15 AM **THAM-B.3**

Emergency Preparedness and Response at the Nuclear Regulatory Commission
Brock, K.
US Nuclear Regulatory Commission

9:30 AM **THAM-B.4**

Introduction and Demonstration of the First Portable Radiation Emergency Command Packet
Crawford, J.
University of Missouri, Columbia

9:45 AM **BREAK**

10:00 AM **THAM-B.5**
Internal Radioactivity Level Estimation by Depth Deconvolution
Bellamy, M., Hertel, N.
Georgia Institute of Technology

10:15 AM **THAM-B.6**
Assessing Internal Contamination after an RDD Event using Readily Available NaI Detectors
Dewji, S., Hertel, N., Scarboro, S., Manger, R.
Georgia Institute of Technology

10:30 AM **THAM-B.7**
Using a Dose Rate Meter to Assess Internal Dose Following a Radiological Dispersion Device
LoBracco, C., Hertel, N.
Georgia Institute of Technology

10:45 AM **THAM-B.8**
Assessing Internal Dose after a Radiological Dispersion Device with a GM Detector
Manger, R., Hertel, N.
Georgia Institute of Technology

11:00 AM **THAM-B.9**
Assaying Internal Contamination Following a Radioactive Dispersal Device Using a Thyroid Probe
Scarboro, S., Hertel, N., Burgett, E., Howell, R.
Georgia Institute of Technology, University of Texas, MD Anderson

11:15 AM **THAM-B.10**
An Orofacial Radiation Detection Device for Rapid Triage of Personnel at Risk of Internal Radionuclide Contamination from Inhalation
Waller, E.
University of Ontario Institute of Technology

11:30 AM **THAM-B.11**
Q-band Electron Paramagnetic Resonance Dosimetry in Micro Biosamples
Romanyukha, A., De, T., Pass, B., Schauer, D., Romanyukha, L., Trompier, F., Clairand, I., Misra, P., Benevides, L.
Naval Dosimetry Center, Howard University, NCRP, USUHS, IRSN

8:30-10:30 AM **406**

THAM-C: Risk Analysis

Co-Chairs: Louise Buker, Ed Parsons

8:30 AM **THAM-C.1**
Perception of "Safe" Dose Among a Group of Radiation Professionals
Ansari, A.
Centers for Disease Control and Prevention

8:45 AM **THAM-C.2**
The Spatial Distribution of Solid Cancer Incidence in the Japanese Atomic Bomb Survivors
Cullings, H., Funamoto, S.
Radiation Effects Research Foundation

9:00 AM **THAM-C.3**
Risk-Based Prioritization for Nuclear Material Repackaging - An Approach Combining Decision and Statistical Science Techniques
Hoffman, J., Kelly, E., Koehler, A., Smith, P.
Los Alamos National Laboratory

9:15 AM **THAM-C.4**
Evaluation of Potential Biological and Environmental Effects of United States Launches of Large Radionuclide Sources
Tupin, E., Anspaugh, L., Goldman, M., Nelson, R., Poppell, S., Scott, R.
US Environmental Protection Agency, University of Utah, University of California, Davis, US Department of Energy, National Aeronautics and Space Administration

9:30 AM **THAM-C.5**
Update of Research on Low Dose Radiation Effects and Risk
Dauer, L.D., Brooks, A.L., Hoel, D.G., McGrath, R.N., Morgan, W.F., Stram, D.O., Tran, P.K.
Memorial Sloan-Kettering Cancer Center, Washington State University, University of South Carolina, Electric Power Research Institute, University of Maryland, University of Southern California

9:45 AM **BREAK**

10:00 AM **THAM-C.6**
Ionizing Radiation Exposure of the US Population
Kase, K.R., Rosenstein, M., Miller, K.L., Quinn, D.M., Strom, D.J., Suleiman, O., Thomadsen, B.R.
National Council on Radiation Protection and Measurements, Hershey Medical Center, DAQ, Inc, Pacific Northwest Laboratories, US Food and Drug Administration, University of Wisconsin

10:15 AM **THAM-C.7**
Answering Risk Concerns Following Diagnostic X-ray Exam via E-mails
Jacobus, J.
National Institutes of Health

8:30-11:45 AM **407**

THAM-D: Internal Dosimetry and Bioassay

Co-Chairs: Gary Kramer, Jay MacLellan

8:30 AM **THAM-D.1**
Alpha-Emitter Bioassay for Emergency Response
Li, C., Lariviere, D., Kramer, G., Cornett, J.
Health Canada

8:45 AM **THAM-D.2**
Evaluation of Elevated Uranium Bioassay Samples
Bland, J.S., Gaul, W.
Chesapeake Nuclear Services

9:00 AM **THAM-D.3**
So Why Shouldn't You Run Bioassay Samples Through an ICPMS Environmental Metals Laboratory?
MacLellan, J., Timm, R., Fehr, A.
Pacific Northwest National Laboratory, GEL Laboratories

- 9:15 AM** **THAM-D.4**
 A Determination of H-3 Uptake in a Nursing Infant
Ribaudo, C., Roberson, M., Ngutter, L.
National Institutes of Health
- 9:30 AM** **THAM-D.5**
 Planned Revision of ICRP Publication 38
Eckerman, K., Endo, A.
Oak Ridge National Laboratory, Japan Atomic Energy Agency
- 9:45 AM** **BREAK**
- 10:00 AM** **THAM-D.6**
 Design, Fabrication, and Use of a New Anthropometric Calibration Phantom for Direct, In Vivo Measurement of Am-241 Deposited in a Wound
Lobaugh, M., Zeman, R., Spitz, H., Glover, S., Hickman, D.
University of Cincinnati
- 10:15 AM** **THAM-D.7**
 Measurement of the Quantity 'Activity' of Radionuclides in Simulated Human Organs: an International Intercomparison
Kramer, G.
Health Canada
- 10:30 AM** **THAM-D.8**
 UF Series of Hybrid Computational Phantoms Representing ICRP Reference Anatomy and CDC Standardized Anthropometric Data
Lee, C., Lodwick, D., Hurtado, J., Pafundi, D., Bolch, W.
University of Florida
- 10:45 AM** **THAM-D.9**
 An Analysis of the Dependency of Lung Counting Efficiency on Specific Anatomy in Selected Physical and Tomographic Phantoms
Mille, M., Zhang, B.Q., Xu, X.G.
Rensselaer Polytechnic Institute, China Institute for Radiation Protection
- 11:00 AM** **THAM-D.10**
 VOXMAT: Phantom Model with Combination of Voxel and Mathematical Geometry
*Akkurt, H., Bekar, K., Eckerman, K.**
Oak Ridge National Laboratory, PSU
- 11:15 AM** **THAM-D.11**
 Distributions of Actinide Tissue Concentrations and Dose Rates in USTUR Donors
Fallahian, N., James, T., Brey, R.
Idaho State University, United States Uranium and Transuranium Registeries
- 11:30 AM** **THAM-D.12**
 In-vitro Experiments on Determination of the Type of Material of the Object Shelter Aerosol
Aryasov, P., Nechaev, S., Tsygankov, N., Dmitrienko, A.
Radiation Protection Institute of Ukraine, State Enterprise Chernobyl Nuclear Power Plant

AAHP Courses

Saturday, July 12, 2008 - 8 AM-5 PM

AAHP1 Radiation Risk Communication – Tools for Helping People Understand Radiation

Ray Johnson

Dade Moeller & Associates, Radiation Safety Academy Division

A poll of health physicists during my chapter visits in 1999 showed that the number one concern was about lack of public understanding of radiation. While we have perfected the technical tools for our profession, we have not done as well on developing our skills for helping people understand radiation. Consequently, workers and the public often react to radiation based on myths which they have come to accept. We know most everyone is afraid of radiation, and yet the tools for dealing with radiation fears are not usually part of our training or experience. Such tools are available from psychological and behavioral sciences and they can be adapted to help us become more effective in radiation risk communication.

This class will include the following tools: 1) how to understand the basis of public fears, 2) how anxiety is linked to images of radiation consequences, 3) how to use active listening as a way to hear, identify, and deal with radiation fears, 4) how to respond to radiation questions, 5) how to gain public or worker attention and cooperation, 6) what to say, when you don't know what to say, 7) how to set goals for successful communications, 8) how to understanding your preferred communication style and that of your audience, 9) the significance of social roles – how do you want to be seen, and 10) how to use positioning as a tool for public or worker acceptance. Attendees are invited to bring at least one communication scenario for troubleshooting and application of communication tools in the class. The class will include time to practice communication tools. Attendees will also receive a copy of the 75 monthly columns on Insights in Communication published in the HPS Newsletter.

AAHP2 Key Elements of Preparing Emergency Responders for Nuclear and Radiological Terrorism: An Overview of NCRP Commentary 19

Ian Hamilton

Baylor College of Medicine

This course will begin with a brief overview of the history of terrorism and the progression of an act of terror. Discussion of the current threat posture in the context of nuclear and radiological weapons of mass destruction will follow. The introduction will close with a short review of the tenets of NCRP Report No. 138, Management of Terrorist Events Involving Radioactive Material, to include psychological and communication aspects of such an event.

The remainder (and majority) of the course will focus on NCRP Commentary No. 19, Key Elements of Preparing Emergency Responders for Nuclear and Radiological Terrorism. This section will begin with an overview of the recognized need for and development of the commentary. Specific advice of the writing committee to the Department of Homeland Security will then be addressed. Equipment requirements for emergency responders, including radiation

detection and personnel protection equipment, will be reviewed in the context of existing and needed materials. Radiation decontamination equipment, and medical supplies needed at the local level, will be explained, as will integration of radiological/medical- and decontamination triage with existing local, medical response infrastructure. Recommendations for content and frequency of training and exercises at the federal, state and local levels with regard to radiation protection aspects of such events will then be reviewed. All of the foregoing will be explained in-depth by two of the report authors (course instructors). Provision of a technical basis for the support of preparedness activities such as development of responder protocols, equipment procurement recommendations, and the frequency and content of training and exercises will be the focus of course content.

AAHP3 Developing & Demonstrating Compliance with DCGLs for Subsurface Soils

Jeffrey W. Lively

MACTEC Development Corporation

Students should have some basic knowledge of the application of MARSSIM in order to gain the most value from the class.

The U.S. Nuclear Regulatory Commission (NRC) and other federal agencies currently approve the Multi-Agency Radiation Site Survey and Investigation Manual (MARSSIM) as guidance for licensees who are conducting final radiological status surveys in support of decommissioning. MARSSIM provides a method to demonstrate compliance with the applicable regulation by comparing residual radioactivity in surface soils with derived concentration guideline levels (DCGLs), but specifically discounts its applicability to subsurface soils.

A new method to derive dose-based subsurface soil DCGLs that embody the overarching concepts and principles found in recent NRC decommissioning guidance (NUREG 1757) has been developed. The subsurface soil method also establishes a rigorous set of criterion-based data evaluation metrics (with analogs to the MARSSIM methodology) that can be used to demonstrate compliance with the developed subsurface soil DCGLs. The NRC has approved the use of this method at a licensee site currently undergoing decommissioning. The method establishes a continuum of volume factors that relate the size and depth of a volume of subsurface soil having elevated concentrations of residual radioactivity with its ability to produce dose. The method integrates the subsurface soil sampling regime with the derivation of the subsurface soil DCGL such that a self-regulating optimization is naturally sought by both the responsible party and regulator.

The method provides several advantages over the application of surface limits to subsurface soil, particularly for the party or parties funding the remediation.

This course will describe the concepts and bases underlying the new dose-based subsurface soil DCGL method.

Professional Enrichment Program

Sunday, July 13 through Wednesday, July 16, 2008

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, July 13, a series of **24** courses will be offered between 8:00 am - 4:00 pm.

In addition to the above-mentioned sessions for Sunday, five PEP lectures are scheduled on Monday, Tuesday, and Wednesday afternoons from 12:15 - 2:15 pm.

Registration for each two-hour course is \$60 and is limited to 60 attendees on a first-come, first-served basis. Those whose registrations are received before the pre-registration 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 min-

utes 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 June 17. 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 1A Medical Health Physics Refresher

Mike Charlton

The University of Texas Health Science Center at San Antonio

The dynamic medical health physics setting mandates continual review of current practices. The medical health physics environment has drastically changed over the recent past with new applications, new imaging modalities, and a new regulatory structure. This continual evolution makes it challenging for the practicing medical health physicist to remain abreast of the current issues. This session will review recent regulatory changes, highlight commonly observed radiation-producing device deficiencies, operator doses from portable x-ray imaging, CT imaging dose considerations, and discuss recent medical irradiator security issues. Ideas for improving medical health physics programs focusing on training, example shielding calculations, medical health physics safety surveys, and commonly observed medical health physics issues are provided. Attendees will have the opportunity to ask medical health physics questions and exchange key successes that worked in their environment with the speaker.

Medical Health Physics Refresher:

1. The University of Texas Health Science Center at San Antonio maintains the only medical health physics graduate program in Texas. This novel program emphasizes the tangible relationship between physicians, medical physicists, and health physicist in the conduct of medicine.

2. This refresher course was developed through lectures given to assist health physics students and radiology residents prepare for national board examinations.

3. Dr. Charlton was awarded the 2006 Teacher of the Year Award in UTHSCSA Radiology and the first non-clinician to receive the award in more than a decade.

PEP 1B Uranium Mining and Milling

Tom Johnson

Colorado State University

Recently the price of uranium has gone up dramatically from approximately \$10 per pound to well over \$100 per pound, causing a resurgence in interest in uranium mining. The purpose of this presentation is to provide an overview of some of the radiation hazards as well as the mining and milling process associated with uranium. In situ leach (ISL) or in situ recovery (ISR) mines are the most common types of uranium mines today, while open pit mines and underground mines are not currently operational in the United States. There are currently four ISR mines operating in Wyoming, Nebraska, and Texas today. ISR mines typically operate at a lower cost because the requirement for milling and extensive processing of the ore upon removal is not required. After the uranium has been removed from open pit or underground mines, it requires milling to remove unwanted minerals and to purify it for use in the nuclear fuel cycle. Milling also results in tailings, which require additional radiological controls and resources. This overview of the "front end" of the fuel cycle will provide health physicists with the general information needed to begin to understand the radiation hazards associated with mining.

PEP 1C How to Conduct Audits and Prepare for Inspections of Industrial X-ray and Radiography Facilities

Ray Johnson

Dade Moeller & Associates Radiation Safety Academy Division

This course will provide a detailed review for auditing all aspects of radiation safety and how to prepare for inspections for facilities either manufacturing or using industrial, analytical, cabinet, and baggage-type x-ray inspection machines and radiography. Topics will include registration, duties of the RSO or designated responsible person, training for x-ray machine operators and radiographers, facilities and equip-

ment, radiation instruments, utilization logs, occupational dosimetry, public dose, safe operating and emergency procedures, handling of exposure devices, conducting surveys, access control, posting and labeling, shielding, security, daily inspections, rate meter alarms, identifying and reporting defects, notifications in event of an accident, and record keeping. An audit outline will be provided along with experience from 15 years of actual audits and inspections, including common program deficiencies and violations.

Inspections show that many facilities do not have a copy of, do not understand, or are not following state regulations. In many facilities the x-ray machine is simply an inspection tool and the operators may have little understanding of the regulatory requirements for use of that tool. While requirements for state registration are met, many facilities do not know about additional state requirements concerning a written radiation safety program, annual audits, principles of ALARA, monitoring of workers, training, use of radiation instruments, surveys, posting, and record keeping. Many facilities do not have a document called Safe Operating and Emergency Procedures or pertinent training. In fact, inadequate training is probably the basis for most of the radiation safety program deficiencies listed above. For example, many states require that a suitable and functioning radiation meter be available that is calibrated for the energy used. Virtually every audit has shown that available radiation survey instruments are inadequate. Many x-ray machine operators have never heard about energy dependence and thus have instruments that either cannot detect their x-ray signal at all, or may drastically over or under respond. Typically scattered x-rays of concern for worker safety will have energies from 10 to 30 keV and most radiation instruments do very badly at these energies. Many facilities have never conducted an annual audit of their radiation safety program nor have any idea what an annual audit represents

PEP 1D Training Emergency Responders; Materials, Tools, and Methods for Health Physicists (Session 1)
Brooke Buddemeier, Tom Clawson
Lawrence Livermore National Laboratory/Technical Resources Group, Inc.

Research and development for responder needs to an RDD event is currently being funded by the Department of Homeland Security. The course will discuss a summary of some of the discoveries being made and how they impact the needs of the response community. In addition to certifications in the training programs below (3 CDs full movies and training materials), information will be provided on how to interface with emergency responders and national programs that are available to fund and equip local responders.

Excellent training materials exist for training first responders (firefighters, law enforcements, EMTs), but you can't just download all them off the internet. Students who successfully complete all three consecutive PEP sessions will become certified trainers in at least 2 responder training programs. Over 20 hours of "Train the Trainer" coursework has been compressed into a 3 part PEP class designed for the radiation safety professional. The Modular Emergency Response Radiological Transportation Training (MERRTT) offers over 16 modules of multimedia rich training material including presentations, student & instructor guides, tests, practical exer-

cises, and regionally available training aids. Additional materials on response to radiological and nuclear terrorism will be provided as well as suggestions on how to work with the responder community.

PEP Session #1 - Modular Emergency Response Radiological Transportation Training Program (MERRTT), Train the Trainer session #1

PEP 1E Irradiated Gemstones
Andy Karam
Karam Consulting LLC

Some colored gemstones get their color by being irradiated. If they are reactor- or accelerator-irradiated, they fall under the NRC category of byproduct material, and the companies that produce and import them must be licensed. Since this issue has only recently become a topic of interest, many health physicists are not necessarily knowledgeable in this area. In this PEP, we will discuss the basic science behind gemstone irradiation, the radioactivities that can be produced, and the radiological issues that this processing raises. We will also discuss the practicalities of the jewelry industry to gain a better idea of the daily operations of a large jewelry importer. Finally, we will discuss some of the regulatory issues that have arisen in the pursuit of radioactive materials licenses.

PEP 1F Assessor Training, Part I: Techniques for Successful Technical Assessments
Steven N. Bakhtiar, Sam Keith, Scott O. Schwahn, Ken Swinth, Linnea Wahl
Lawrence Berkeley Laboratory, Centers for Disease Control, Swinth Associates, US Department of Energy, Idaho

This course is the first in a three-part series that provides information to individuals interested in performing technical assessments, especially individuals desiring certification as HPS Laboratory Accreditation Program (LAP) assessors. The objective of this course is to provide a general introduction to the recommended principles and practices of the process for assessing health physics operations.

The philosophy espoused in this course is that regulatory compliance and conformance form the basis from which a laboratory can improve and optimize its operations. Helping assessees understand why they must comply is the most important step in helping them determine how to improve their operations.

Elements of this course include an overview of the qualifications and training of assessors and assessment team leaders. The course also presents the four phases of the assessment process, based on the "Plan-Do-Study-Act" model: assessment planning, performance, reporting, and close-out. Techniques will be presented to assist assessors in communicating with the assessment team, the customer, interviewees, and the sponsoring organization. The presentation is general enough to apply to all aspects of radiation protection.

PEP 1G The Nuclear Renaissance – Licensing Process for New Nuclear Power Plants

Jay Maisler

Enercon Services, Inc.

This course is an introduction to the “Nuclear Renaissance.” Licenses applications for new nuclear plants have been recently submitted and are under review by the U.S. Nuclear Regulatory Commission – more are planned for submittal. Information on the status of license applications (submitted and expected) and early site permits will be provided. The Combined License Application (COLA) process will be reviewed in detail. The second half of the course will present details on COLA requirements for radioactive waste management, radiation protection, and operational programs. Good things for professional health physicists to know about the COLA process will be discussed throughout the course.

PEP 1H When HPs Get Gas – What You Should Know About P-10

Gary Kephart

Bechtel Jacobs Co LLC

Although routinely used in proportional counters, P-10 gas (10% methane in argon) may be one of those commodities that we as health physicists tend to take for granted. The intent of this PEP is to review the critical industrial hygiene characteristics of P-10 gas and to benefit from the shared experiences of participants who have had to procure, ship, store, and utilize this compressed gas in support of radiological control programs.

After a quick overview of industry consensus standards for compressed gas safety, this PEP will touch on various perspectives important to flammability of P-10, asphyxiation hazards, and dilution ventilation. Focus will be on IH tools and their utility in making and defending the conservative assumptions appropriate to indoor P-10 applications typical of many radiological control program uses of proportional counters.

SUNDAY - 10:30 AM-12:30 PM

PEP 2A Health Physics Considerations for Production of PET Radionuclides for Radiopharmaceutical and Research Uses

Roger Moroney

Siemens Molecular Imaging

The use of Positron Emission Tomography, or PET, has expanded rapidly in the last few years, and is projected to continue to increase in volume each year as physicians and patients become more aware of PET’s diagnostic capabilities. All PET radionuclide production starts with an accelerator. Most of the accelerators in use for this purpose are small cyclotrons with maximum proton energy of less than 20 MeV. These cyclotrons may be self-shielded or use a bunker. The prompt radiation fields around these cyclotrons include high energy photons and neutrons with the magnitude of the field depending on the radionuclide being produced, the particle type and energy, and the beam current. Secondary radiation fields arise from the desired PET radionuclide produced as

well as from activation products. PET radionuclides produce two 511 keV photons per positron, which requires much thicker shielding than for the traditional nuclear medicine radionuclides during production, research and transport in order to manage personnel exposures. Activation products present in the target and surrounding areas create external radiation fields during maintenance activities and must be managed to keep exposures low to personnel maintaining the cyclotron. Production of some radionuclides and radiopharmaceuticals lead to airborne effluents that may require control and/or monitoring to demonstrate compliance with regulations. Good facility design is critical to ensuring adherence to regulations as well as to improve operational efficiencies that will lead to lower radiation exposures to staff. The combination of these items leads to a dynamic and complex radiological environment that provides a good challenge to today’s Health Physicists

PEP 2B Instrument Selection, Calibration, and Use for Unrestricted Release

Ed Walker

This presentation shall describe issues that must be considered for the detection and evaluation of residual radiation and radioactive material on surfaces of items, on building and land surfaces, and on personnel prior to unconditional release to the public. The discussion will focus on issues associated with portable radiation detection systems only.

Selection of an appropriate detection system must consider the radiation source emissions, source geometries, and measurement protocol, e.g. scan vs. fixed point measurements. The presentation will include examples of the effects of calibration and check source characteristics when applied to the interpretation of field measurements. These effects include source vs. detector geometries, and the physical characteristics of the fabricated source vs. residual field conditions.

The presentation will also include common field practices that impact the interpretation of field measurements using laboratory calibration conditions.

PEP 2C Method to Perform Solubility Determination of Liquid Radioactive Wastes and the Results for 250 Biomedical Research Protocols

Jeanne Peterson

Boston University

Radioactive materials play a significant role in biomedical and life sciences research. This research results in a wide variety of radioactive waste streams, and the common practice is to pour the liquid radioactive wastes down the drain when the concentration is within limits set by the NRC. In 2007, a study was undertaken at Boston University in response to NRC Information Notice 94-07 concerning the solubility of these liquid radioactive wastes discharged into sanitary sewerage. A total of 250 protocols that involve sewer discharge of liquid radioactive waste were reviewed in detail. The method used to perform solubility reviews will be presented. Attendees will be provided with the results of the study which should be applicable to any institution using similar research protocols.

PEP 2D Training Emergency Responders; Materials, Tools, and Methods for Health Physicists (Session 2)

Brooke Buddemeier, Tom Clawson

Lawrence Livermore National Laboratory/Technical Resources Group, Inc.

See PEP 1D for description.

PEP Session #2 - Modular Emergency Response Radiological Transportation Training Program (MERRTT), Train the Trainer session #2 and Trainer Certification Test

PEP 2E Supernovae and Life on Earth (or wherever)

Andy Karam

Karam Consulting LLC

Supernovae release a tremendous amount of energy and are among the brightest phenomena in the universe. In fact, we can see supernovae to a distance of billions of light years. It is only natural to wonder if such powerful events can have an impact on terrestrial life and, in fact, many have speculated that supernovae may have actually caused mass extinctions on Earth. In addition, many scientists (and science fiction authors) have speculated that life may travel between planets and between stars on the insides of meteors or comets, subject to constraints posed by cosmic radiation. In this PEP we will discuss the science of supernovae and the impact that they can have on the local and galactic neighborhood. From this, we will find out why it is unlikely that supernova radiation has ever killed life on Earth, but how they could still be implicated in mass extinction events - and what we should see in the fossil record if this has happened. Finally, we will discuss the impact of supernovae on the interplanetary or interstellar transport of microbes, and what this may portend for the concept of panspermia

PEP 2F Assessor Training, Part II: The Assessor's Role in Technical Assessments

Steven N. Bakhtiar, Linnea Wahl, Ken Swinth, Jim Rolph

Lawrence Berkeley Laboratory, Swinth Associates, CH2M Hill Hanford

This course is the second in a three-part series that provides information to individuals interested in performing technical assessments, especially individuals desiring certification as HPS Laboratory Accreditation Program (LAP) assessors. The objective of this course is to provide an in-depth understanding of the role and responsibilities of an assessor who must prepare, conduct, and conclude the technical audit of health physics activities and quality systems.

The principles and practices of technical auditing can be applied equally to a laboratory accreditation process or to a radiation protection program. In all situations, the overall goal is to identify those processes that are performed well and those for which there are opportunities for improvement.

This course will review and explain in detail the extent and limits of the duties, responsibilities, and authorities of the assessor. Participants will learn how to plan the audit, conduct the opening meeting, perform interviews, carry out the audit, conduct the closing meeting, prepare the assessment report, complete follow-up activities, and close the assessment. Discussion will emphasize the importance of these elements in any assessment process and the key role they play

in successfully verifying competency and providing feedback on opportunities for improvement.

PEP 2G New Developments in Uncertainty Estimation: GUM Supplement 1

Carl Gogolak

Consultant

The ISO/GUM has become the de facto standard for evaluating measurement uncertainty. This course will briefly review the GUM methodology, and then will discuss some new developments introduced in the draft document "Evaluation of measurement data — Supplement 1 to the GUM — Propagation of distributions using a Monte Carlo Method." This supplement also introduces a Bayesian framework for evaluating measurement uncertainty. The procedures involved will be described, along with some examples and suggestions for software implementation. The GUM uses the law of propagation of uncertainty to provide the combined standard uncertainty of a measurement result. This is based on an approximation. It uses only the best estimate of the mean and standard uncertainty of each input quantity even though a distribution for the input quantities, using professional judgment, is specified a part of a Type B uncertainty evaluation. The result of the GUM evaluation is often expressed as an expanded uncertainty defining a coverage interval around the measurement result associated with an estimated probability that the true value lies within that interval. This probability is really like a Bayesian degree of belief. Thus, there is a certain inconsistency in the GUM between classical and Bayesian viewpoints, both in Type B evaluations and in the interpretation of coverage intervals. The GUM Supplement 1 addresses some of the issues mentioned above. Using Monte Carlo, a distribution of measurement outcomes can be simulated. Coverage probabilities can be calculated without the assumption of a normal or student's t distribution for the result. The approximation in the law of propagation of uncertainty is also avoided. The supplement provides a new Bayesian approach to interpretation of expanded uncertainties, and contains guidance for making uncertainty estimates using this approach. This Bayesian approach is central to ISO guidance on the determination of detection limits for measurements of ionizing radiation, which will be discussed in a companion PEP course at this meeting.

PEP 2H Training First Responders on Radiological Dispersal Devices (RDDs) and Improvised Nuclear Devices (INDs) Events

Kenneth Groves

S2-Sevorg Services, LLC

This course 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 amounts 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.

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.

SUNDAY - 2:00-4:00 PM

PEP 3A Performing Occupational Internal Dose Calculations with Freely Available Computer Codes

Tom LaBone
MJW Corporation

Starting about twenty years ago we could do a wide variety of ICRP-30 based internal dosimetry calculations using the intake retention fractions from NUREG-4884 and the intake-to-dose conversion factors from Federal Guidance Report Number 11. Both documents were (and still are) freely available. All that was needed to evaluate bioassay data and assign a dose was the two documents, a hand calculator, and a bit of knowledge.

So, one might ask what kind of similar (freely available) tools are available today to do ICRP-68 based internal dose calculations? In this PEP I intend to answer that question by reviewing how to use the Radiological Toolbox, DCAL, your favorite spreadsheet, and a bit of knowledge to evaluate bioassay data and assign internal doses using the newer models. The Radiological Toolbox and DCAL can be downloaded at <http://www.nrc.gov/about-nrc/regulatory/research/radiological-toolbox.html>, <http://www.epa.gov/rpdweb00/assessment/dcal.html>

Another tool we will find useful is PopTools, an MS Excel add-in that enables us to easily interpolate tables of data with Excel, which is available at <http://www.cse.csiro.au/poptools/>

Basic internal dosimetry information is concisely presented in IAEA Safety Report Number 37, a highly recommended report which available at http://www-pub.iaea.org/MTCD/publications/PDF/Pub1190/Pub1190_web.pdf

Although this is not a “hands on” course, students are encouraged to download and install these programs and review the manuals before coming to the course so that they can follow along if they wish.

PEP 3B Measuring and Displaying Radiation Protection Program Metrics That Matter (to Management)

Bob Emery
The University of Texas Health Science Center at Houston

Radiation protection programs typically accumulate data and documentation so that regulatory officials can assess compliance with established regulations. The implicit logic associated with this activity is that compliance equates to an

acceptable level of safety. But in this era of constricted resources, mere regulatory compliance is no longer sufficient to justify all necessary programmatic resources. Radiation protection programs are now expected to readily demonstrate how they add tangible value to the core missions of an organization. The demonstration of this value is expected to be in the form of some sort of performance metrics, but this is an area in which many radiation safety professionals have not been trained. The issue is further compounded by the need to display the metric information in manners that are succinct and compelling, yet another area where formal training is often lacking. This session will first describe a variety of possible radiation protection program performance measures and metrics, and then will focus on the display of the information in ways that clearly convey the intended message. Actual before and after data display “make-overs” will be presented, and ample time will be provided for questions, answers, and discussion.

PEP 3C Radiation Response and First Responder Standards

Tom O’Connell, Gordon Diotalevi
HPS Homeland Security Committee/Hazardous Materials, Counter-Terrorism Training Group

The PEP will examine and discuss the potential impacts on subject matter experts of the most recent response standards from the National Fire Protection Association (NFPA) and the American Society for Testing and Materials (ASTM). These standards contain information specific to responses to hazardous materials incidents and WMD events involving radiation. Understanding the content of the standards and the potential training impacts on subject matter experts and emergency responders will enable a radiation safety professional to effectively integrate into the local response organization.

PEP 3D Training Emergency Responders; Materials, Tools, and Methods for Health Physicists (Session 3)

Brooke Buddemeier, Tom Clawson
Lawrence Livermore National Laboratory/Technical Resources Group, Inc.

See PEP 1D for description.

PEP Session #3 - Additional modules on radiological and nuclear terrorism response from Homeland Defense Equipment Reuse (HDER). Current guides, recommendations, and standards for radiological emergency response. Engaging and interfacing with the responder community

PEP 3E EPA Protective Action Guides Manual: A Refresher and the Revision

Sara DeCair, Ed Tupin
Center for Radiological Emergency Management US Environmental Protection Agency

As health physicists, we will be called upon during radiological emergencies to provide the expertise needed to support decision makers, answer media questions and, generally, keep the public safe. The U.S. Environmental Protection Agency’s Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, referred to as the PAG Manual, is a tool that we can use to support decision makers at the Federal, state, tribal and local levels during radiological incidents.

This two-hour course will provide a refresher on how the PAG Manual is used and how incident-specific numeric values can be found in the Manual or calculated independently. Additionally, the course will provide in-depth information on the draft revision of the PAG Manual, which will provide several key updates and additions to the existing guidance.

The draft revision clarifies the use of the existing 1992 protective action guides and protective actions for incidents other than nuclear power plant accidents. It lowers the projected thyroid dose for administration of stable iodine based on data from the Chernobyl accident. It provides new guidance concerning consumption of drinking water during or after a radiological emergency. It also updates the dosimetry basis from ICRP 26 to ICRP 60 for all tables of derived levels. Finally, the draft revision includes new guidance for dealing with long-term site restoration following a major radiological release. This is based on the Department of Homeland Security guidance on implementing PAGs after a radiological dispersal device (RDD) or improvised nuclear device (IND), which was developed by a multi-agency working group that included EPA. The guidance acknowledges that for the broad range of potential impacts from radiation incidents, no single numeric cleanup level can be recommended. Instead, it provides a framework to follow to ensure key stakeholders are involved in a cleanup decision-making process that carefully weighs all relevant factors.

This course is designed for users and implementers of the PAG Manual. Attendees will receive a copy of the draft revision for review and comment.

PEP 3F Assessor Training, Part III- Practical Technical Assessment

*Steven Bakhtiar, Linnea Wahl, Ken Swinth
Lawrence Berkeley Laboratory, Swinth Associates*

In the planning phase, the focus is on proper preparation. An ordered approach is emphasized, including deciding on team responsibilities, use of a checklist, timing, an audit plan, notification, and final team preparation. The performance portion of the training covers the pre-assessment meeting, review of facilities, field investigation, and daily caucus and debriefing meetings. Interview techniques are presented to aid the assessors in obtaining the information that they need with a focus on easing stress on both sides of the interview. It is emphasized that there should be no surprises to the body being assessed. Reporting issues discussed in the training focus on proper description of identified issues and staying within scope. Buy-in from those being assessed is emphasized. By the close-out, those being assessed should know what to expect next, and hopefully, they should believe that they were treated fairly and received benefit from the assessment. Specific exercises and the follow up group discussion will be conducted during this PEP.

PEP 3G Determination of Detection Limits for Measurements of Ionizing Radiation

*Carl Gogolak
Consultant*

The subject of this course will be ISO 11929 on detection limits for ionizing radiation measurements and examples for specific applications. ISO 11929 was formerly divided into

8 parts depending on the application. The earliest of these were based on classical statistics, but later ones used a Bayesian approach. The new draft version of ISO 11929 "Determination of characteristic limits (decision threshold, detection limit, and limits of a coverage interval) for measurements of ionizing radiation: Fundamentals and Applications" is based on Bayesian statistics and the Bayesian theory of measurement uncertainty. The method and applications have been unified into one consistent document. The term characteristic limits refer to three familiar concepts in radiation detection. The decision threshold corresponds to a critical level for detection, the detection limit corresponds to a minimum detectable quantity, and the limits of a coverage interval are as described in the GUM. These can be calculated taking into account all sources of uncertainty. Measurement uncertainty and detection capability are strongly linked. The new ISO 11929 approach starts with a complete evaluation of measurement uncertainty according to the GUM. This is followed by the determination of the characteristic limits using the standard uncertainty obtained. Bayesian statistics allows a consistent foundation of the GUM for both type A and type B uncertainties. This is in contrast to classical (frequentist) statistics that generally do not apply to type B uncertainties, which often rely on professional judgment.

PEP 3H The Spectrum of Radiation Protection Actions: From Institutional to Individual

*Dan Strom
Pacific Northwest National Laboratory*

Radiation protection includes phrases as diverse as "Duck and cover," "The licensee must ensure...", and "Signatories to the Treaty shall...". Recommendations and commandments in radiation protection are aimed at different actors, from the individual to the work group to the employer's staff and management to the regulator to the legislator to the diplomat. Radiation protection recommendations from the International Commission for Radiological Protection (ICRP) or the National Council on Radiation Protection and Measurement (NCRP) focus primarily on institutional actions. Government and institutional actions include treaties and laws regulating production, transport, use, and disposal of radiation sources; laws creating regulatory agencies; increasingly detailed regulations, guidance, and supporting documents; regulation of workplaces in which radiation is unlicensed; professional guidance for those using radiation in the healing arts; rules and recommendations for the nuclear and radiological battlefield; rules and recommendations for emergency response actions on the parts of institutions and individuals; and recommendations for managing indoor radon and voluntary medical procedures. This presentation presents discussions of who is empowered to protect, how they are empowered, and what they need to know to carry out protection. Many individual actions are rarely covered in academic health physics books and programs: what an individual should do in case of a nuclear or radiological attack, unannounced radiological releases (e.g., the Chernobyl accident or a stealthy radionuclide dispersion), or encounters with radioactive contamination that is not regulated. Case studies are provided from Chernobyl, pre-regulatory radium use in the USA, 20th century civil defense, and radiological dispersion from both individual and occupational perspectives. Options for all actors are evaluated in the

framework of the “Ten Principles and Ten Commandments of Radiation Protection” (<http://qecc.pnl.gov/10Prin.pdf>).

MONDAY - 12:15-2:15 PM

PEP M1 Low-Level Radioactive Waste Minimization at an Academic Institution

Mike Zittle

Oregon State University

Management of low-level radioactive and mixed waste at academic and medical institutions is challenging due to the small quantities and wide variety of wastes generated. These organizations are often non-profit or government funded and it is important to keep costs down while maintaining regulatory compliance. Although often perceived as difficult, it is possible to be in compliance with all Federal and Agreement State NRC and EPA regulations without going over budget.

This PEP focuses on techniques to minimize generation of radioactive and mixed waste and will also discuss waste processing services available to reduce the volume of waste for disposal. Emphasis will be placed on the three R's: Reduce, Reuse, and Recycle. This course presents waste management strategies for various waste streams including sanitary sewer disposal, decay-in-storage, bench top treatment of wastes, and the EPA mixed waste conditional exemptions. This course also emphasizes the importance of utilizing process knowledge, accurate sample analysis, and quality assurance to efficiently manage radioactive and mixed waste. Creative ideas will be presented that allow waste managers at academic and medical institutions to effectively raise awareness and train waste generators while also reducing the volume and cost of radioactive and mixed waste disposal.

PEP M2 Basic Statistics

Steve Prevette

Fluor Hanford

This session will cover basic statistics for Health Physics. How to use the statistical formulae covered in the American Board of Health Physics examination will be provided. Hands-on physical demonstrations will be used to demonstrate statistical calculations such as mean, standard deviation, variance, and sampling. Counting statistics, the Poisson distribution, and release survey false alarm and failure to detect rates will be included. A basic introduction to the principles behind Bayesian statistical calculations will be performed using an ordinary set of playing cards. If you have questions about statistics and their usage, this session will be of help to you.

PEP M3 Fundamentals of Neutron Detection and Detection Systems for Assay of Nuclear Material

Jeff Chapman

Canberra

In 1932, James Chadwick published a seminal paper in the Proc. Roy. Society titled “The Existence of a Neutron.” 73 years later we rely on a number of detection processes to provide neutron dosimetry for personnel, to confirm operational shielding design requirements, and to measure special nuclear materials (SNM). This PEP session will focus on the fundamentals of neutron detection and an overview of devices

used to detect SNM. The following topics will be covered: fast neutron detectors; thermal neutron detectors; neutron moderation and absorption; passive neutron counting with SNAP detectors; passive neutron coincidence and multiplicity counting; active neutron interrogation; and portal monitors.

PEP M4 Basic Principles of Environmental Control by Ventilation

Herman Cember

Purdue University

This course will present an overview of the basic principles of ventilation for the purpose of environmental control of airborne toxicants. The introductory material will include a review of the properties of air, air-vapor mixtures, and aerosols. We will discuss units of measurement of airborne contaminants, permissible exposure limits (PEL's), toxicity vs. hazard, and explosive levels. The information will be applied to the calculation of airflow requirements for dilution ventilation for control of toxicants and flammable vapors. We then will address contaminant control at the source by local exhaust ventilation. Our discussion will include the major components of a local exhaust system, and the important design parameters for each component.

PEP M5 Operational Accelerator Health Physics I

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.

TUESDAY - 12:15-2:15 PM

PEP T1 How to Conduct News Media Interviews

Ray Johnson, Kelly Classic

Dade Moeller & Associates, Radiation Safety Academy Division/Mayo Clinic

Radiation incidents, no matter how small, may attract news interest because “radiation” is always a topic of “concern” to the public. When conducting an interview, in whatever role you play, you will more likely be heard if you focus on “public concerns” or fears. The news media will not likely let you avoid issues of public concerns anyway. Feelings and fears are what make radiation stories newsworthy. You should make every effort to respond to perceptions of risk to show that you are aware of the feelings and fears and to show that you care. To the extent that you are able to identify with the feelings, conflicts, and values of the public, you will be viewed as a competent and credible source of information. When you speak in the language of the public's concerns,

you have a better chance to effectively communicate a reasonable perspective. In this session we will elaborate on the following guides to news media interviews: 1) establish your goals in advance, 2) determine your five most important messages, 3) determine what the reporter wants, 4) identify the issues, conflicts, values, and stakeholders, 5) list the five worst things the reporter could bring up, 6) practice your responses with a friend, 7) show that you care, 8) hear and reflect feelings and values, 9) respond to feelings before criticizing logic or solving problems, 10) demonstrate your competence, 11) give short crisp answers in the language of the audience, 12) frame your responses in partnership with the audience, 13) position for your most favorable social role, 14) put energy and feeling into your responses, 15) listen attentively, but do not nod your head unless you agree with the reporter, 16) pause before answering, 17) use natural gestures and be warm and friendly, as if you were talking with a friend, 18) decide to be NON-defensive, and 19) for TV, provide options for action coverage. Remember there is an audience behind the camera that the reporter is playing to and you can do the same.

PEP T2 Recent Developments in Radiation Litigation

Doug Poland

Godfrey & Kahn, S.C.

This class will cover two general topics. First, it will provide an overview of the U.S. legal system and a description of the issues that typically arise in lawsuits involving allegations of personal injuries or property damage caused by ionizing radiation. The issues that will be covered include the structure of the court systems in which radiation-related legal claims typically are brought; the types of legal claims that are most often alleged and what is required to prove those claims; legal standards for determining whether any particular exposure was the cause of a particular injury; a litigant's obligations regarding the creation and retention of data and documents in the litigation context; differences in the standards of conduct that apply to contractors and licensees under state and federal law (through the Price-Anderson Act); and exposure-based claims such as medical monitoring and emotional distress. Second, with that framework in mind, the class will discuss recent judicial opinions and rulings in lawsuits involving allegations of physical injury or property damage caused by radiation exposure or environmental releases.

PEP T3 Radiological Performance Measures

Steve Prevette

Fluor Hanford

This session will provide ideas on deciding what to measure, how to analyze the resulting numbers, and how to make decisions from the results. Suggested Leading and Lagging performance indicators will be discussed, and case studies provided. Analysis will focus upon the use of Statistical Process Control for trending, and Pareto Charting for categorization of causes and events. Techniques in use at the Hanford Washington Department of Energy site will be overviewed. If you are involved with, or have been a victim of performance measures, this session will help you succeed with your measures.

PEP T4 Neutrons- A Primer

Jeff Chapman

Canberra

As a result of several comments received during the last few years of PEP sessions on neutrons, we have decided to offer a primer on neutrons. This PEP will be very introductory in nature, for the HP who simply has not had the opportunity to work in operations involving neutrons. This Primer will identify all source terms for neutrons, common methods of detection, as well as radiation protection regulations, detector calibration, and dosimetry.

PEP T5 Operational Accelerator Health Physics II

Scott Walker

Los Alamos National Laboratory

Operational Accelerator Health Physics II focuses on specific medium and high energy accelerator related design, control and health physics problems. The topics include: Spallation targets, handling high dose rate targets, beam dump design, isotope production, cooling water systems, shutters, radiation detection instrumentation, personnel dosimetry, high dose dosimetry (measuring radiation damage to equipment), high energy neutron spectroscopy, skyshine, releases of airborne radionuclides accelerator related electrical hazards, and the accelerator health physics program.

WEDNESDAY - 12:15-2:15 PM

PEP W1 Overview of Interactive Radioepidemiological Program (IREP)

David Kocher

SENES Oak Ridge, Inc.

The Interactive RadioEpidemiological Program (IREP) is a web-based, interactive computer program to estimate the probability that a given cancer in an individual was induced by given exposures to ionizing radiation. This probability is referred to as "probability of causation/assigned share" (PC/AS). IREP is used to estimate PC/AS in compensation programs for energy workers and military participants at atmospheric nuclear-weapons tests. IREP calculates PC/AS for all cancer types except chronic lymphocytic leukemia. PC/AS for a given cancer in an individual is calculated from an estimate of the excess relative risk (ERR) associated with given radiation exposures and the relationship $PC/AS = ERR/(ERR + 1)$. IREP is intended to provide unbiased estimates of ERR and PC/AS and their uncertainties to represent the current state of knowledge. A full accounting of uncertainty is necessary when decisions about granting claims for compensation for cancer are made on the basis of an estimate of the upper 99% credibility limit of PC/AS to given claimants the "benefit of the doubt" in the presence of uncertainty. This lecture presents an overview of models and methods incorporated in IREP to estimate probability distributions of ERR and PC/AS including (1) models to estimate ERRs for specific cancer types in study populations, principally the Japanese atomic-bomb survivors, as a function of sex, age at exposure, and attained age or time since exposure, (2) corrections to ERRs in study populations to account for random and systematic errors in dosimetry, (3) adjust-

ments to ERRs at times shortly after exposure to account for a minimum latency period of specific types of cancer, and (4) adjustments to apply ERRs in atomic-bomb survivors to the U.S. population and to conditions of exposure other than acute exposure to low-LET radiations at relatively high doses. Approaches to accounting for uncertainty in the models are emphasized. Limitations of IREP are discussed, and modifications that may be incorporated in future versions of the program are mentioned. [*The findings and conclusions in this Abstract have not been formally disseminated by the National Institute for Occupational Safety and Health (NIOSH) and should not be construed to represent any agency determination or policy. This work is supported by NIOSH under Contract No. 200-2006-18097.]

PEP W2 Implications for Security Based Uses of Radiation

Rick Whitman

US Customs and Border Protection

Beginning before 2001, some radiation uses including detectors, gamma and x-ray machines, were used to look for contraband. Since 2001, and the development of the homeland security concept, the numbers and types of systems has grown to include a variety of detectors as well as non-intrusive inspection systems, including detectors, x-ray, gamma and accelerator based systems for both indoor and outdoor environments. The challenge for the radiation professional is to ensure that these systems are used in such a way so as to minimize potential exposure to employees. The concern over how to classify employees using security based systems – while not traditional radiation workers, and they really are not members of the general public either – and where this topic may be heading in the future will be explored. The target audience for this program will be those overseeing or advising security staff members or those who want to know more about the category of non-intrusive inspection systems.

PEP W3 Laser Safety for Health Physicists

Ben Edwards

Duke University Medical Center

This course provides an overview of laser physics, biological effects, and hazards, as well as concise distillation of the requirements in the ANSI Z136.1-2007 Standard for the Safe Use of Lasers. Course attendees will learn practical laser safety principles to assist in developing and conducting laser safety training, performing safety evaluations, completing hazard calculations, and effectively managing an institutional laser safety program. While some knowledge of laser hazards will be helpful, both experienced and novice health physicists with laser safety responsibilities will benefit from this course. Participants should bring a scientific calculator to allow a “walk through” of example pre-worked hazard calculations. Students will also find their own copy of ANSI Z136.1-2007 a helpful reference.

PEP W4 How to Prepare for News Media Interviews

Ray Johnson, Kelly Classic

Dade Moeller & Associates, Radiation Safety Academy Division/Mayo Clinic

Many HPs dread the possibility of a news media interview. The occasion for such interviews may be an emer-

gency where stress, conflicts, and fears are involved. In the urgency of the situation you may have little time to prepare for an interview, you may not have all the facts, and your attention may be needed to respond to the emergency. Despite the competing pressures and demands, you still want to present a favorable image of yourself and your organization. Most HPs will want to demonstrate their technical competence and control of the issues. However, a general audience may judge your competence mostly (90%) on how you present yourself, in terms of voice tone, mannerisms, and body language, and only 10% on what you have to say. The first step in preparing is to determine your interview goals. We will work with you to increase your ability to quickly prepare five key messages that you want to include in your interview; these are your focal points. We will also review what reporters want. They are not usually subject matter experts, however, they want their story to be as factual and accurate as possible. They may seek experts on the current event to obtain the best information possible. For video news they also want action at the scene of the event and you may be interviewed as the on-scene authority. They may not try to verify the truth. Remember journalism builds on conflict; conflict among people, organizations, policies, and actions are things reporters can understand. Reporters want to identify conflicting claims, cover the opposing views, give each side their chance, and accurately report what is said. The news is also oriented towards public perceptions of radiation. Do your best to identify the conflicts, issues, and values of concern to the public as you assess the event and prior to your interview. Be especially aware of negative perceptions the audience may hold of your organization or your activity. Develop a list of the worst things that a reporter could throw at you, such as critical or negative comments, and practice your responses with a friend. Be prepared to present your mission statement as a sound bite.

PEP W5 Review of IATA Requirements for Air Transportation of Radioactive Material

Sean Austin

Dade Moeller and Associates/Radiation Safety Academy

This session will review requirements of the International Air Transport Association (IATA) pertaining to the air transportation of radioactive materials. There have been changes to these requirements pertaining to the preparation of radioactive materials for shipment in excepted packages. We will review IATA requirements for training of HAZMAT employees, classification of hazardous materials, exemptions, normal form and special form radioactive materials, limited quantities of materials, articles and instruments containing a radioactive component, low-specific activity shipments (LSA-I, LSA-II, LSA-III), and surface contaminated objects (SCO-I and SCO-II). We will review requirements for radioactive material packagings, marking and labeling packages, placarding vehicles, and completion of shipping papers. There will be discussion explaining the differences between IATA requirements and the hazardous materials regulations of the U.S. Department of Transportation.

Continuing Education Lectures

Monday, July 14 through Thursday, July 17 - 7:00-8:00 AM

Included in Registration Fee

MONDAY

7:00-8:00 AM

CEL1 After Katrina – Applying Health Physics Controls to Accomplish Restoration and Cleaning of Military Personal Property in the Gulf Coast Region

Jim Hylko

Paducah Remediation Services, LLC

Numerous transportation service providers (TSPs) along the Gulf Coast region that store personal property and household belongings for U.S. military personnel and their families were affected by Hurricane Katrina. The purpose of this project was to provide expert services to evaluate, clean, dry, and restore approximately 680,000 kg (1,500,000 pounds) of personal property being stored at nine separate TSP facilities located in Mobile, Alabama; Biloxi, Mississippi; Gulfport, Mississippi; and New Orleans, Louisiana. The uncertainties associated with working in an area devastated by a Category 5 hurricane prompted the implementation of a “Safety 101 - Back to Basic Principles” training program. Prior to actual field mobilization, employees were provided a description of the expected working conditions, local infrastructure, and supplies required to complete the defined scope of work. The primary exposure hazard to the field crews was expected to be mold. Applicable engineering, administrative, and personal protective equipment controls established for hazardous chemicals and radioactive materials were used to prevent employee exposure when handling suspect items “contaminated” with mold. Project documentation and procedures were developed to enhance field safety, address unanticipated conditions, and emergency preparedness prior to arriving at the particular work locations. Assembly-style cleaning stations were used to clean, process, and store salvageable items. The successful completion of this national disaster response effort was quantified by zero injuries, zero accidents, and zero allergic signs or symptoms while completing all contractual requirements.

CEL2 Effectively Managing the “Under-Exposed”

Bob Emery

The University of Texas Health Science Center at Houston

Consider this: of all the personnel monitoring you have ever performed in your career, how many results exceeded the regulatory or recommended exposure limit? Based on the responses to this question from literally hundreds of safety professionals from across the country, the consensus answer appears to be in the range of 2 to 5%. This anecdotal feedback suggests that 95 to 98% of the individuals monitored may have received some amount of exposure, but at levels below any recommended limit. So while this implies that most of the exposure situations we monitor are not in excess of any accepted limits, experience tells us that a subpopulation of these individuals can still harbor concerns and apprehensions their exposures. If such concerns are mismanaged or ignored, the situation can result in huge losses in terms of decreased productivity, frivolous complaints, regulatory inspections, and possible lawsuits. Hence, the proper man-

agement of the “under-exposed”¹ is an essential health and safety job function, yet these skills are rarely addressed in our academic preparation. In this presentation, the variables associated with typical “under-exposed” situations will be discussed, and then the recognized tenets of effective risk communications will be applied to describe ways in which the situations might be managed so that worker concerns can be addressed and impacts on productivity are kept to a minimum. Ample time will be provided for participant questions, comments, and discussion.

¹ the term “under-exposed” is really a misnomer, in that individuals may actually be receiving some level of exposure, but at level below any recommended or established level. The term is used here to emphasize the notion that the exposure situations being addressed in this presentation are those below any existing standard or recognized guideline.

TUESDAY

7:00-8:00 AM

CEL3 Spend a Little, Save a Lot! How Lightning Strike Detection Technology Supports Company and Community Activities

James M. Hylko

Paducah Remediation Services, LLC

The weather is the most significant and unmanageable variable when performing outdoor environmental remediation activities. This variable can contribute to the failure of a project in two ways: 1) severe injury to an employee or employees following a cloud-to-ground lightning strike without prior visual or audible warnings; and 2) excessive “down time” associated with mobilization and demobilization activities after a false alarm (e.g., lightning was seen in the distance but was actually moving away from the site). Therefore, in order for a project to be successful from both safety and financial viewpoints, the uncertainties associated with inclement weather, specifically lightning, need to be understood to eliminate the element of surprise. This CEL discusses educational information related to the history and research of lightning, how lightning storms develop, types of lightning, the mechanisms of lightning injuries and fatalities, and follow-up medical treatment. Fortunately, lightning storm monitoring does not have to be either costly or elaborate. An electronic lightning detection system would monitor and alarm field personnel in the event of an approaching lightning storm. This application justified the purchase of a hand-held model used by the Heath Youth Athletic Association (HYAA) which is a non-profit, charitable organization offering sports programs for the youth and young adults in the local Paducah, Kentucky community. Fortunately, a lightning injury or fatality has never occurred at this particular work location or an HYAA-sponsored event. Continued use of these fixed and hand-held systems should prevent such injuries from occurring in the foreseeable future.

CEL4 The Life Cycle of a Trend

Steve Prevette

Fluor Hanford, Inc.

This session will overview how to make use of performance data in a trending program. The aim of the session is to show how to achieve performance improvements from your radiological performance measures. The use of Statistical Process Control (SPC) for statistical trending will be overviewed. The session will also demonstrate developing baselines and predictions, trend detection, and monitoring for return to stability following a trend. This information will be integrated with the Plan Do Study Act improvement cycle, and goal-setting. Using the information from this session, you should be able to take a new look at your radiological data, and gain maximum use from it for performance improvement.

WEDNESDAY

7:00-8:00 AM

CEL5 Uncertainty Assessment in Atmospheric Dispersion Computations

Erno Sajo

Louisiana State University

Atmospheric dispersion models based on elementary statistical theory (such as the Gaussian plume model) compute time-averaged concentrations at fixed points downwind. It is well-known that model predictions entail uncertainties. Most often, this is expressed in terms of "factor of validity," but it may also be shown as a spatial uncertainty interval about the location of the computed mean. Most of the computer models, however, including all widely used NRC and EPA regulatory models, do not incorporate any type of uncertainty handling, and in most cases they do not warn the user of the fluctuations in the predicted values of dose or local concentration. In 40 CFR 51 EPA recognizes the importance of estimating the prediction uncertainties, and it makes it the modeler's responsibility to advise the decision maker of this fact, and to provide an assessment of these uncertainties, both in space and in magnitude, and their impact on the evaluation of hazard zones. Because EPA does not give guidance on specific methods of implementation, and because most regulatory, emergency, and release reconstruction models do not sanction any uncertainty handling, it is a serious challenge to meet the spirit of the regulations. This lecture reviews the fundamentals of uncertainty estimation in dispersion modeling, and gives practical methods of assessment even when the computer model does not provide this information explicitly.

CEL6 Looking at the Big Picture

Andy Karam

Karam Consulting LLC

As health physicists, we specialize in radiation safety, and most of our efforts are aimed at reducing radiological risks. What we sometimes forget is that radiation is only one of the risks we face on a regular basis - and it is not always the most serious risk. While we are professionally and legally obligated to follow the philosophy of ALARA, we must also try to keep a more global perspective on risk reduction. When we see, for example, parents choosing exploratory surgery for their children instead of a CT scan - because of

their fears of radiation - we must realize that there is more to risk reduction than simply reducing radiation dose to the lowest level possible. In this CEL, we will discuss some of these matters - in particular, how we can try to fit our obligations as health physicists in with our obligations to our society, and how we might pursue a more comprehensive philosophy of ALARA that encompasses risks other than the strictly radiological.

THURSDAY

7:00-8:00 AM

CEL7 Pu-238 Source Leak Event: Internal Dosimetry Considerations

Rob Jones

Pacific Northwest National Laboratory

In June, 2007, a Pu238 source was discovered to be "leaking," causing contamination spread in two buildings and staff member's cars and personal residences. Contamination spread was also possible in public areas. Internal dosimetry considerations for immediate staff, ancillary staff, and members of the public as a result of the leaking source will be discussed.

CEL8 The Most Powerful Tool for Effective Risk Communication - Active Listening

Ray Johnson

Dade Moeller & Associates Radiation Safety Academy Division

Perhaps our greatest challenge when talking with people about radiation risks is when the dialogue gets emotional. We may find ourselves not knowing what to do when our best technical data and logical analyses are not accepted by those who are afraid of radiation. What can we do when confronted with hypothetical questions which do not seem to have clear rational answers? How can we respond when our best answers seem to be causing the other person to become more and more upset? Suppose we do not have the data from which to give a good technical answer? Is there any hope?

The effectiveness of any communication is not about the message that we send, but the response of the other person. Thus, the best opportunity for communication is to start with what the other person is saying. This may be difficult for specialists in radiation safety when the information provided by the other person does not make any technical sense. Typically we want to hear good data for which we can apply our well developed analytical logic to resolve the problem and give an answer accordingly. When the other person appears to be speaking emotional nonsense, what options do we have? The answer is active listening. This may be the single most powerful tool for effective risk communications. Active listening does not take ownership of the problem. In other words, we do not have to give a problem-solving answer. Active listening is also non-defensive and avoids a dozen roadblocks to effective communications. Active listening is based on the insight that every communication has two parts, a feeling or emotional part and a content part. By training and experience, we are usually very good at hearing the content part of a message. Identifying the feelings is more difficult. For technical types, it may help to suggest that all

feelings can be captured by synonyms of four words, mad, sad, glad, and afraid. An active listening response paraphrases the content and identifies the underlying feeling. For example, a person says, "Radiation, I do not want anything to do with that!" An active listening response could be, "You are worried that radiation may be harmful for you." By hearing the feelings first, we may find that the feelings are defused (when you really hear the feeling, the other person does not have to keep trying to express that feeling). Hearing feelings also opens the door for further dialogue and helps identify the real issues. In this session we will describe the process of active listening and provide opportunities for practice.

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, JUNE 17, 2008

REGISTRATION FEES: (Mark Appropriate Boxes)	Preregistration Fees	On-Site Fees
<input type="checkbox"/> HPS Member (Sun. Reception, Mon. Lunch, Tues. Awards Dinner)	\$375	\$450
<input type="checkbox"/> Non-Member (Sun. Reception, Mon. Lunch, Tues. Awards Dinner)	\$450*	\$525*
<input type="checkbox"/> Student (Sun./Student Receptions, Mon. Lunch, Tues. Awards Dinner)	\$ 60	\$ 60
<input type="checkbox"/> One-Day Registration <input type="checkbox"/> Mon/ <input type="checkbox"/> Tues/ <input type="checkbox"/> Wed/ <input type="checkbox"/> Thurs	\$225	\$225
<input type="checkbox"/> HPS Emeritus Member (Sun. Reception, Mon. Lunch, Tues. Awards Dinner)	No Fee	No Fee
<input type="checkbox"/> HPS PEP Lecturer (Sun. Reception, Mon. Lunch, Tues. Awards Dinner)	No Fee	No Fee
<input type="checkbox"/> Companion (Sun. Reception, Mon.-Wed. Continental Breakfast & pm snacks)	\$ 65	\$ 65
<input type="checkbox"/> Exhibition ONLY (Exhibit Hall Badge)	\$ 35	\$ 35
<input type="checkbox"/> Exhibitor (Two Per Booth)	No Fee	No Fee
<input type="checkbox"/> Additional Tues. Awards Dinner Ticket(s) # of Tickets _____	\$ 60	\$ 60
<input type="checkbox"/> AAHP Awards Lunch Ticket(s) (Tues.) '07 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 2008 - *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"/> City Tour with a stop at the Duquesne Incline (Sunday, 7/13)	# of Tickets ___ X \$33	# of Tickets ___ X \$37	_____
<input type="checkbox"/> Tour and Wine Tasting (Sunday, 7/13)	# of Tickets ___ X \$46	# of Tickets ___ X \$51	_____
<input type="checkbox"/> City Tour with a stop at the Duquesne Incline (Monday, 7/14)	# of Tickets ___ X \$33	# of Tickets ___ X \$37	_____
<input type="checkbox"/> Church Tour (Monday, 7/14)	# of Tickets ___ X \$36	# of Tickets ___ X \$41	_____
<input type="checkbox"/> Pittsburgh Zoo and PPG Aquarium (Monday, 7/14)	# of Tickets ___ X \$59	# of Tickets ___ X \$64	_____
<input type="checkbox"/> Walking Architectural Tour with High Tea (Monday, 7/14)	# of Tickets ___ X \$36	# of Tickets ___ X \$41	_____
<input type="checkbox"/> Annual Pub Crawl (Monday, 7/14)	# of Tickets ___ X \$30	# of Tickets ___ X \$35	_____
<input type="checkbox"/> Annual HPS 5K Run/Walk (Tues, 7/15) Shirt Size: S <input type="checkbox"/> M <input type="checkbox"/> L <input type="checkbox"/> XL <input type="checkbox"/>	# of Tickets ___ X \$30	# of Tickets ___ X \$35	_____
<input type="checkbox"/> Golf Outing (Tuesday, 7/15)	# of Tickets ___ X \$84	# of Tickets ___ X \$84	_____
<input type="checkbox"/> Phipps Cons., Nationality Classrms, Heinz Chapel (Tues, 7/15)	# of Tickets ___ X \$46	# of Tickets ___ X \$51	_____
<input type="checkbox"/> Frick Art and Historical Center (Tuesday, 7/15)	# of Tickets ___ X \$38	# of Tickets ___ X \$42	_____
<input type="checkbox"/> Fallingwater and Kentucky Knob (Tuesday, 7/15)	# of Tickets ___ X \$79	# of Tickets ___ X \$84	_____
<input type="checkbox"/> Le Cordon Bleu School of Cooking (Wednesday, 7/16)	# of Tickets ___ X \$40	# of Tickets ___ X \$45	_____
<input type="checkbox"/> Night Out - Heinz History Center (Wednesday, 7/16)	# of Tickets ___ X \$45	# of Tickets ___ X \$50	_____
<input type="checkbox"/> Kennywood Amuse Park or Sandcastle Water Park (Thurs, 7/16)	# of Tickets ___ X \$79	# of Tickets ___ X \$84	_____
<input type="checkbox"/> Kennywood Amuse Park after 5 pm (Thursday, 7/16)	# of Tickets ___ X \$56	# of Tickets ___ X \$61	_____
<input type="checkbox"/> Both Parks (Thursday 7/16)	# of Tickets ___ X \$107	# of Tickets ___ X \$112	_____
<input type="checkbox"/> Heinz Field, PNC Park, Penn Brewery Company (Thurs 7/16)	# of Tickets ___ X \$44	# of Tickets ___ X \$49	_____
TECHNICAL TOURS			
<input type="checkbox"/> National Robotics Engineering Center/Post Gazette (Mon, 7/14)	# of Tickets ___ X \$25	# of Tickets ___ X \$25	_____
<input type="checkbox"/> Westinghouse Hot Cell Tour (Tuesday, 7/15)	# of Tickets ___ X \$25	# of Tickets ___ X \$25	_____
<input type="checkbox"/> Homer Laughlin Pottery and Heritage - WTI, Inc (Wed, 7/16)	# of Tickets ___ X \$25	# of Tickets ___ X \$25	_____
<input type="checkbox"/> PNC Firstside Center and Pittsburgh Glass Center (Thurs, 7/17)	# of Tickets ___ X \$25	# of Tickets ___ X \$25	_____

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 _____

Credit Card Billing Address: _____

Cardholder Name: _____ Signature _____

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

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

Your Housing while in Pittsburgh: _____ Name: _____

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

AAHP COURSES: Saturday, 7/12 - 8:00 AM - 5:00 PM

- AAHP1 Radiation Risk Communication – Tools for Helping People Understand Radiation. *R.Johnson* \$200.00
- AAHP2 Key Elements of Preparing Emergency Responders ... *I. Hamilton* \$200.00
- AAHP3 Developing & Demonstrating Compliance with DCGLs for Subsurface Soils. *J.W. Lively* \$200.00

PROFESSIONAL ENRICHMENT PROGRAM:

Sunday, 7/13 8:00 - 10:00 AM

- 1A Medical Health Physics Refresher. *Mike Charlton*
- 1B Uranium Mining and Milling. *Tom Johnson*
- 1C How to Conduct Audits and Prepare for Inspections ... *Ray Johnson*
- 1D Training Emergency Responders I. *Brooke Buddemeier, Tom Clawson*
- 1E Irradiated Gemstones. *Andy Karam*
- 1F Assessor Training, Part I: Techniques for Successful Technical Assessments. *S.N. Bakhtiar, S. Keith, S.O. Schwahn, K. Swinth, L. Wahl*
- 1G The Nuclear Renaissance – Licensing Process for New Nuclear Power Plants. *Jay Maisler*
- 1H When HPs Get Gas – What You Should Know About P-10. *Gary Kephart*

Sunday, 8:00-10:00 AM
 ___/___/___ = \$60.00
 1st 2nd 3rd
 Yes, stand by list

Sunday, 7/13 10:30 AM - 12:30 PM

- 2A Health Physics Considerations for Production of PET Radionuclides ... *Roger Moroney*
- 2B Instrument Selection, Calibration, and Use for Unrestricted Release. *Ed Walker*
- 2C Method to Perform Solubility Determination of Liquid Radioactive Wastes ...*Jeanne Peterson*
- 2D Training Emergency Responders II. *Brooke Buddemeier, Tom Clawson*
- 2E Supernovae and Life on Earth (or wherever). *Andy Karam*
- 2F Assessor Training, Part II: The Assessor’s Role in Technical Assessments. *S.N. Bakhtiar, L. Wahl, K. Swinth, J. Rolph*
- 2G New Developments in Uncertainty Estimation: GUM Supplement 1. *Carl Gogolak*
- 2H Training First Responders on Radiological Dispersal Devices (RDDs) ... *Kenneth Groves*

Sunday, 10:30 AM-12:30 PM
 ___/___/___ = \$60.00
 1st 2nd 3rd
 Yes, stand by list

Sunday, 7/13 2:00 - 4:00 PM

- 3A Performing Occupational Internal Dose Calculations ... *Tom LaBone*
- 3B Measuring and Displaying Radiation Protection Program Metrics ... *Bob Emery*
- 3C Radiation Response and First Responder Standards. *Tom O’Connell, Gordon Diotalevi*
- 3D Training Emergency Responders III. *Brooke Buddemeier, Tom Clawson*
- 3E EPA Protective Action Guides Manual: A Refresher and the Revision. *Sara DeCair, Ed Tupin*
- 3F Assessor Training, Part III- Practical Technical Assessment. *Steven Bakhtiar, Linnea Wahl, Ken Swinth*
- 3G Determination of Detection Limits for Measurements of Ionizing Radiation. *Carl Gogolak*
- 3H The Spectrum of Radiation Protection Actions: From Institutional to Individual. *Dan Strom*

Sunday, 2:00-4:00 PM
 ___/___/___ = \$60.00
 1st 2nd 3rd
 Yes, stand by list

Monday, 7/14 12:15 - 2:15 PM

- M1 Low-Level Radioactive Waste Minimization at an Academic Institution. *Mike Zittle*
- M2 Basic Statistics. *Steve Prevette*
- M3 Fundamentals of Neutron Detection and Detection Systems for Assay ... *Jeff Chapman*
- M4 Basic Principles of Environmental Control by Ventilation. *Herman Cember*
- M5 Operational Accelerator Health Physics I. *Scott Walker, Robert May*

Monday, 12:15-2:15 PM
 ___/___/___ = \$60.00
 1st 2nd 3rd
 Yes, stand by list

Tuesday, 7/15 12:15 - 2:15 PM

- T1 How to Conduct News Media Interviews. *Ray Johnson, Kelly Classic*
- T2 Recent Developments in Radiation Litigation. *Doug Poland*
- T3 Radiological Performance Measures. *Steve Prevette*
- T4 Neutrons- A Primer. *Jeff Chapman*
- T5 Operational Accelerator Health Physics II. *Scott Walker*

Tuesday, 12:15-2:15 PM
 ___/___/___ = \$60.00
 1st 2nd 3rd
 Yes, stand by list

Wednesday, 7/16 12:15 - 2:15 PM

- W1 Overview of Interactive Radioepidemiological Program (IREP). *David Kocher*
- W2 Implications for Security Based Uses of Radiation. *Rick Whitman*
- W3 Laser Safety for Health Physicists. *Ben Edwards*
- W4 How to Prepare for News Media Interviews. *Ray Johnson, Kelly Classic*
- W5 Review of IATA Requirements for Air Transportation of Radioactive Material. *Sean Austin*

Wednesday, 12:15-2:15 PM
 ___/___/___ = \$60.00
 1st 2nd 3rd
 Yes, stand by list

Are you interested in being a Mentor at the meeting? Yes No
 Are you interested in working with a Mentor at the meeting? Yes No

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

AAHP Total \$ _____
 PEP Total \$ _____
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