FINAL PROGRAM

53rd Annual Meeting of the Health Physics Society

(American Conference of Radiological Safety)

July 13-17, 2008

David Lawrence Convention Center

Pittsburgh, PA

Headquarters Hotel

Westin Convention Center Pittsburgh
1000 Penn Avenue
Pittsburgh, PA 15222
Telephone: (412) 281-3700
Fax: (412) 227-4500

Future Annual Meetings

54th	July 12-16, 2009	Minneapolis, MN
55th	June 27-July 2, 2010	Salt Lake City, UT

Future Midyear Topical Meeting

42nd	Jan 31-Feb 3, 2009	San Antonio, TX

Topic: Recent Advances in Planning and Response to Radiation Emergencies

43rd	January 24-27, 2010	Albuquerque, NM

Look online for future upcoming meeting details: hps.org/meetings

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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Registration Hours

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Saturday, July 12 . . . . . .2:00-5:00 pm
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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

Officers

Kevin L. Nelson, *President*
Richard E. Toohey, *President Elect*
Kathryn H. Pryor, *Secretary*
David J. Allard, *Treasurer*
Darrell R. Fisher, *Treasurer Elect*
Brian Dodd, *Past President*
Richard J. Burk, Jr., *Executive Secretary*

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Armin Ansari
Lisa M. Bosworth
Eric Goldin
Barbara L. Hamrick
Nolan Hertel
Michael Lewandowski
Matthew P. Moeller
Kathleen L. Shingleton
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Keith Dinger, Government Relations Liaison
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Craig A. Little, Operational Radiation Safety Editor-in-Chief
Christopher Martel, Program Committee Chair
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Michael T. Ryan, Journal Editor-in-Chief
Linda M. Sewell, Parlimentarian/Rules Chair

Program Committee

Chair: Christopher Martel
Ben Edwards
Philip D. Kearney
Matthew C. McFee
Kathryn Brock
Patricia L. Lee
Heidi Walton
Nicolas Bates
Robin Hill
Tara Medich
Laura Pring

2008 Task Force - Pittsburgh

Chairperson: Matthew McFee
Nicolas K. Bates
Robin L. Hill
Philip D. Kearney
Patricia L. Lee
Tara M. Medich
Laura Pring
Heidi A. Walton

Local Arrangements Committee

Director/Liaison - Armin Ansari
Chair - James G. Yusko
Vice Chair - Andrew J. Lombardo
Treasurer - Joe Nardi
Anita Mucha
Lisa Blough
Dustin Miller
Mitch Belanger
Peggy Blackwood
Mike Sheetz
Dee Whitt
Wayne Bickerstaff
Dwight Shearer
Megan Marks
Celia Rajkovich
Dan Berkley
VisitPittsburgh - Kristen Heiser
VisitPittsburgh - Dennis Burrell

Important Events

Welcome Reception

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

Exhibits

Free Lunch! Free Lunch! – 12:15 pm, Monday, July 14. All registered attendees are invited to attend a complimentary lunch in the HPS exhibit hall at the David L. Lawrence Convention Center.

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

The ABHP courses on Saturday will be held in the Westin Pittsburgh. All other sessions and courses will be held at the David L. Lawrence Convention Center.

AAHP Awards Luncheon

Tuesday July 15
Noon-2:15 pm
David L. Lawrence Convention Center
Room 411/412 (CC)

HPS Awards Banquet

An enjoyable evening, this event will be held in the Westin Pittsburgh Allegheny 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 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, David L. Lawrence Convention Center, Room 307, 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

AAHP Awards Luncheon

The AAHP is sponsoring an Awards Luncheon on Tuesday, July 15, at Noon, in Room 411/412 (CC) in the David L. Lawrence Convention Center. You may purchase tickets on site at the Registration Desk.

Tuesday Evening Awards Reception & Banquet

Join your peers in honoring the following awardees while enjoying a delicious meal. Brief award presentations will immediately follow the dinner. All attendees are strongly encouraged to stay and show support for the award recipients. This event will take place in the Westin Pittsburgh in the Allegheny Ballroom, on Tuesday, July 15, from 7:00 - 10:00 pm. The following awards are to be presented:

Distinguished Public Service Award
The Honorable Pete V. Domenici

Founders Award
Keith H. Dinger

Elda E. Anderson Award
Phillip W. Patton

Outstanding Science Teacher Award
Brian A. Whitson

Fellow Award

Dave Allard
James S. Bogard
Frazier L. Bronson
Gloria E. Chavez
Kathryn A. Higley
Tracy A. Ikenberry
Robert P. Miltenberger
Kevin L. Nelson
Thomas F. O'Connell
Kathryn H. Pryor
Joseph P. Ring
Kathleen L Shingleton
Marlow J. Stangler
George J. Vargo
Linnea E. Wahl

Menu

* Caesar salad with a twist - romaine lettuce, shaved parmesan cheese, artichoke hearts, roasted red peppers and focaccia croutons
* filet of beef - pan seared beef tenderloin (7 oz.), served with caramelized onions and shallots, accompanied by burgundy mashed potatoes and seasonal vegetables (e.g., asparagus, carrots), rolls and butter
* "charlotte style" raspberry explosion - yellow cake topped with mounds of raspberry mousse, cheesecake bites and loads of fresh raspberries, buried under white chocolate shavings and raspberry sauce

Freshly Brewed Starbucks Coffee, Regular and Decaffeinated & Tazo teas

For those who prefer a meatless option, the hotel has:
* vegetable napolean - roasted portabella mushrooms accompanied with squash and fresh mozzarella cheese adorned with roasted red pepper coulis sauce

G. William Morgan Trust Fund

When G. William Morgan died in 1984, he bequeathed a substantial fund to the Health Physics Society. The will requires that the fund's interest be used to have internationally known experts present papers at the Society's meetings. Michael C. O'Riordan of the United Kingdom's National Radiation Protection Board was the first international expert to be supported by the Society through the Morgan Fund. O'Riordan's presentation "Radon in Albion" was part of the Indoor Radon Session at the 1989 Albuquerque meeting.

G. William Morgan was a Charter member of the Society and during the Society's early years a very active member. Bill began his health physics career at Oak Ridge National Laboratory as part of the Manhattan Project. He later joined the Atomic Energy Commission and was instrumental in the development of the initial regulations that became part of 10 CFR Part 20. He was a great champion of education and helped establish the AEC Health Physics Fellowship Program. Bill later became very successful in the real estate business, but always retained his interest in the health physics profession. The Society's Presidents Emeritus Committee has responsibility for the selection of the international experts who will be supported by the G. William Morgan Trust Fund.

Registration Hours

Registration at the
David L Lawrence Convention Center, Concourse C:

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

Registration Fees:

Class	Pre-Reg	On-Site
♦HPS Member	$375	$450
♦Non-Member**	$450	$525
❖Student	$ 60	$ 60
♦HPS Emeritus	No Fee	No Fee
♦HPS PEP Lecturer	No Fee	No Fee
●Companion	$ 65	$ 65
■Exhibition ONLY	$ 35	$ 35
Exhibitor (2/booth)	No Fee	No Fee
Add'l Awards Dinner	$ 60	$ 60
AAHP Awards New CHP	Free	Free
AAHP Awards (CHP)	$ 10	$ 10
AHHP Awards Guest	$ 15	$ 15
■Member, 1 Day	$225	$225
■Non-Member 1 Day	$225	$225
■Student, 1 Day	n/a	$ 30

♦ Includes Sunday Reception, Monday Lunch and Tuesday Awards Dinner

❖ Includes Sunday and Student Receptions, Monday Lunch and Tuesday Awards Dinner

● Includes Sunday Reception, Monday-Wednesday Continental Breakfast and afternoon snacks

■ Includes Sessions and Exhibition ONLY

** Includes Associate Membership for year 2008-*FIRST TIME MEMBERS ONLY*.

Session Location

All sessions will take place in the David L. Lawrence Convention Center unless otherwise noted.

LAC Room

Sunday-Thursday 310
David L. Lawrence Convention Center

Activities and Tours

Note: Tickets still availabe for sale can be purchased at the HPS Registration Desk.

Sunday, July 13

Tour and Wine Tasting	CANCELLED
Pittsburgh City Tour	1-4 PM
Open Mic Night	8-11 PM

Monday, July 14

Pittsburgh City Tour	9 AM-Noon
Church Tour	CANCELLED
Zoo and Aquarium	CANCELLED
Walking Arch Tour & Tea	CANCELLED
Annual Pub Crawl	6-11 PM
National Robotics	CANCELLED

Tuesday, July 15

HPS 5K Run/Walk	6:30-8:30 AM
Golf Outing	CANCELLED
Phipps, Nationality, Heinz	CANCELLED
Fallingwater, KY Knob	9:15 AM-4:45 PM
Frick Art & Historical Ctr	CANCELLED
Westinghouse	10:30 AM-3:30 PM

Wednesday, July 16

Le Cordon Bleu	CANCELLED
HPS Night Out	6-10:30 PM
WTI, Inc	CANCELLED

Thursday, July 17

Kennywood/Sandcastle	CANCELLED
Heinz Field/PNC/Penn Brew	CANCELLED
PNC/Pittsburgh Glass	CANCELLED

Information

Technical Sessions - Speaker Instructions

You are allotted a total of 12 minutes of speaking time unless you have been notified otherwise.

The **Ready Room** (Room 307) will be open Sunday from 2-5 pm, Monday through Wednesday from 8-11 am and 2-5 pm. You must check in at the Ready Room (even if you have already submitted your presentation) no later than the following times:

Presentation Time	Check-In Deadline
Monday am	5 pm Sunday
Monday pm	11 am Monday
Tuesday am	5 pm Monday
Tuesday pm	11 am Tuesday
Wednesday am	5 pm Tuesday
Wednesday pm	11 am Wednesday
Thursday am	5 pm Wednesday

Please report to your session room 10 minutes prior to the Session start to let your session chair(s) know that you are there.

PEP/CEL Courses

The PEP Ready Room (Room 306) will have hours posted on the door. Saturday-Wednesday.

Placement Service

Placement Service listings will be posted in the Exhibit Hall.

Business Meeting

The **HPS Annual Business Meeting** will be convened at 5:30 pm on Wednesday, July 16, in 406, David L. Lawrence Convention Center.

Badge Color Code

White=HPS Member, Nonmember, Student
Blue=Companion
Green=Exhibition Only
Salmon=Exhibitor

Companion Hospitality Room

The Hospitality Room is in the Washington Room in the Westin. Come meet with friends and learn about the available attractions in Pittsburgh. Local HPS members will be on hand to help with planning day trips and restaurant recommendations. On Monday morning from 8 to 9 am, we invite all registered companions to an official welcome from a local representative who will provide an orientation to Portland and answer any questions you might have. The Monday breakfast will take place in the Washington Room in the Westin.

Continental breakfast will be available Monday through Wednesday mornings for registered companions, as will afternoon refreshments if attendance warrants.

Hospitality Room
for Registered Companions
in the Westin - Washington Room

Monday Welcome
8:00 - 9:00 am

Days/Hours

Sunday . . . . . .10 am - 3 pm
Monday . . . . . .8 am - 3 pm
Tuesday . . . . . .8 am - 3 pm
Wednesday . . . . . .8 am - 3 pm

Health Physics Society Committee Meetings

All committee meetings will be held in the Westin Hotel unless followed by (CC)

Friday, July 11, 2008

ABHP BOARD MEETING
8:30 am-5:00 pm Cambria East/West

Saturday, July 12, 2008

FINANCE COMMITTEE
8:00 am-Noon Armstrong

ABHP BOARD MEETING
8:30 am-Noon Somerset East

HPS EXECUTIVE COMMITTEE
Noon-4:00 pm Presidental Suite

AAHP EXECUTIVE COMMITTEE
1:00-5:00 pm Somerset East

HP/ORS JOURNAL BOARD MEETING
3:00-6:00 pm Fayette

Sunday, July 13, 2008

HPS BOARD OF DIRECTORS
7:30 am-5:00 pm Crawford East/West

AAHP EXECUTIVE COMMITTEE
8:30 am-5:00 pm Somerset East

PROGRAM COMMITTEE
11:00 am-1:00 pm 307 (CC)

Monday, July 14, 2008

N13.42 WORKING GROUP
10:00 am-2:00 pm Lawrence

INTERNATIONAL COLLABORATION COMMITTEE
11:00 am-1:00 pm Somerset West

NOMINATING COMMITTEE
Noon-2:30 pm Cambria East

CHAPTER COUNCIL MEETING
1:00-2:00 pm 406 (CC)

HPS WEB EDITORS
1:00-5:00 pm Armstrong

AEC ACCREDITATION SUBCOMMITTEE
2:00-4:00 pm Cambria West

AAHP NOMINATING COMMITTEE
2:30-3:30 pm Butler West

SCIENTIFIC AND PUBLIC ISSUES COMMITTEE
3:00-4:30 pm Presidential Suite

HISTORY COMMITTEE
3:00-5:00 pm Somerset West

N13.22 WORKING GROUP
3:00-5:00 pm Crawford East

RULES COMMITTEE
3:00-5:00 pm Lawrence

AWARDS COMMITTEE
4:30-5:30 pm Presidential Suite

Tuesday, July 15, 2008

AAHP PROFESSIONAL DEVELOPMENT COMMITTEE
8:00-10:00 am Somerset West

ANSI N323A/N42.17A
10:00 am-Noon Westmoreland West

LAB ACCREDITATION POLICY COMMITTEE
10:00 am-12:30 pm Fayette

LAB ACCREDITATION ASSESSMENT COMMITTEE
11:30 am-2:00 pm Fayette

SCIENCE SUPPORT COMMITTEE
11:00 am-12:30 pm Crawford East/West

HP PROGRAM DIRECTORS ORGANIZATION
Noon-2:00 pm Westmoreland East

PUBLIC INFORMATION COMMITTEE
Noon-2:00 pm Cambria West

GOVERNMENT & SOCIETY RELATIONS COMMITTEE
1:30-3:30 pm Somerset West

CSU RECEPTION - ALL ARE WELCOME
5:30-7:00 pm Westmoreland Central

Wednesday, July 16, 2008

ANSI N42.320
9:00-11:00 am *Armstrong*

ANSI N13.12
9:00 am - Noon *Westmoreland East*

STUDENT BRANCH MEETING
Noon-2:00 pm *Somerset West*

ANSI 13.8 COMMITTEE
Noon-2:15 pm *Crawford East*

SOCIETY SUPPORT COMMITTEE
Noon-3:00 pm *Somerset East*

HPS DECOMMISSIONING SECTION BOD
12:15-2:00 pm *Lawrence*

MEMBERSHIP COMMITTEE
12:30-2:30 pm *Butler East*

STANDARDS/HPSSC MEETING
1:00-4:00 pm *Armstrong*

ACADEMIC EDUCATION COMMITTEE
2:00-4:00 pm *Butler West*

CONTINUING EDUCATION COMMITTEE
3:00-5:00 pm *Butler East*

HOMELAND SECURITY COMMITTEE
4:30-6:00 pm *Westmoreland East*

Thursday, July 17, 2008

LOCAL ARRANGEMENTS COMMITTEE
7:30-9:30 am *310 (CC)*

HPS BOARD OF DIRECTORS LUNCH
Noon-1:00 pm *Somerset East*

PROGRAM COMMITTEE
Noon-2:00 pm *Butler West*

HPS BOARD OF DIRECTORS MEETING
1:00-5:00 pm *Crawford East/West*

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)

MAM-A: 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

12:15-1:00 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

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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

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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 μR/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

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Hadad, K., Azadbakht, B., Hassan, Z.
Shiraz University, Iran, Baheshti University, Iran

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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

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Acha, R., Wickman, G.
Idaho State University, Umea University

P.24 Superheated Drop Detectors with Enhanced Response to High Energy Neutrons
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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

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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

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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

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Ortensi, J., Miller, J.
International Isotopes, Inc.

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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.

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P.44 Uncovering "A Radioactive Cover-Up"
Gallaghar, R.G.
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P.45 Beta Ray Scintillation Detector Using the Rugged Scintillator
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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 [^{90}Y]-Ibritumomab Tiuxetan in Non–Hodgkin's Lymphomas Radio-immuno-therapeutic 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 Radiopharma-ceutical [^{153}Sm]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 ^{137}Cs 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

Works in Progress

P.62 Evaluation of the NCRP Wound Model using USTUR Plutonium-Contaminated Wound Cases
Germann, L.K., Brey, R.R., James, A.C.
Idaho State University, Washington State University

P.63 Implementation of the ICRP 2007 Recommendations in Korea
Cho, K-W
Korea Institute of Nuclear Safety

P.64 Development of Prompt Gamma Neutron Activation Analysis Facility at Texas A&M Nuclear Science Center Research Reactor for Trace Element Studies - Health Physics Challenges on Neutron/Gamma Radiation Levels and Shielding
Vasudevan, L., Inyang, O., Reece, D.
Texas A&M University

P.65 Environmental Protection Agency's Task-force on Research to Inform and Optimize Chemical Biological and Radiological Response
Hall, K., Drake, J., Hudson, S.
US Environmental Protection Agency, Cincinnati

P.66 The U.S. Army's Operation Iraqi Freedom Depleted Uranium Bioassay Screening Program
Szrom, F., Falo, G.A., Alberth, D.P.
US Army Center for Health Promotion and Preventive Medicine, Walter Reed Army Medical Center

P.67 The Mobility of Radiocesium and Plutonium in Roach Lake in Southern Nevada
Tabriz, M., Hodge, V., Steinberg, S.
Yale University, University of Nevada, Las Vegas

P.68 Dosimetric Evaluation of 142Pr Glass Applicator for the Treatment of Eye Plaques in Large Animals - A Feasibility Study
Jung, J., Vasudevan, L., Reece, W., Walker, M.
Texas A&M University

P.69 Breakthrough Progress in the Design of a Traceable, but Robust and Affordable Beta Source for Contamination Monitors
Iwatschenko-Borho, M.
Thermofisher

3:00-4:45 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 [137-Cs] 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.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

4:00 PM MPM-A.6
New Series of LiF:Mg,Cu,P Extremity Dosimeters
Luo, L., Velbeck, K.
Thermo Fisher Scientific

4:15 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

4:30 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

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 Engergy 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 Inovations & 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 WWll Drinking Water of Ogun State Southwestern Nigeria and Consequent Dose Estimates
Ajayi, O., Achuka, A.
Federal University of Technology, Nigeria

2:30-5:00 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**
Highlights and Lessons Learned from a State Perspective During the TMI Accident
Dornsife, W.P.
Waste Control Specialists

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

2:30-5:00 PM **408/409**

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

HPS Awards Dinner and Reception
7:00-10:00 pm
Allegheny Ballroom, Westin Pittsburgh

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 PEP courses are granted 4 CECs each;
* HPS 1 hour CELs are granted 2 CECs each.

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., Mwaisela-Rose, J.
Florida International University

4:00 PM **WPM-C2.2**
Nanomaterials: New Challenges in Environmental Health and Safety
Sun, C., Gallaghar, 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 Propose 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

3:45-5:30 PM **407**

WPM-D2: Special Session: Military Health Physics

Co-Chairs: Bob Cherry, Scott Nichelson

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**
Improvised 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

5:30-6:30 PM **406**

HPS Business Meeting

6:00-8:30 PM **Westmoreland Central Westin**

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 Impac-tors 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.
Univerisity 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

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

THAM-A: Instrumentation

Co-Chairs: Tim Kirkham, Bob Kellner

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 **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)

8:30-11:45 AM **403/404**

THAM-B: Emergency Planning/Response

Co-Chairs: Nick Bates, Eric Burgett

8:30 AM **THAM-B.4**
Introduction and Demonstration of a Portable Radiation Emergency Command Packet
Crawford, J.
University of Missouri, Columbia

8:45 AM **THAM-B.1**
Effective Use of Medical Countermesures 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 **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 National Laboratory, 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

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

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 8, 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 preregistration deadline will be sent confirmation of their PEP course registration.

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

Please Note!!

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

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

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 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 equipment, 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 exercises, 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 documenta-

tion 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
CANCELLED

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 accel-

erators, 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) adjustments 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 catergory 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 emergency 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 9 through Thursday, July 12 - 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 management 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.

2008 Exhibit Hall Floor Plan

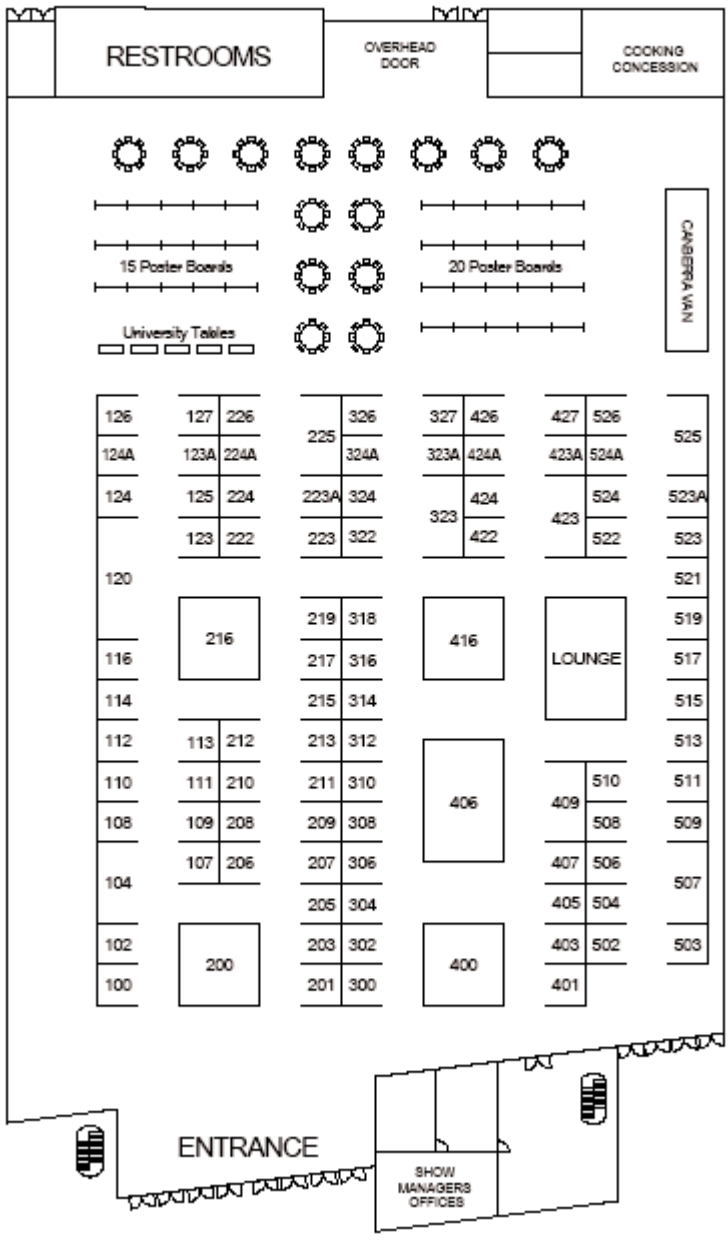

Exhibit Hall Hours	
Monday	12:15 - 5:00 pm
Tuesday	9:30 am - 5:30 pm
Wednesday	9:30 am - Noon

2009 ANNUAL MEETING MINNEAPOLIS, MN **BOOTH: 323A**

2009 MIDYEAR MEETING SAN ANTONIO, TX **BOOTH: 324A**

AAHP/ABHP **BOOTH: 509**

ADCO SERVICES, INC. **BOOTH: 523**

Adco Services, Inc. handles the brokering for processing and disposal of radioactive, hazardous, and non-hazardous wastes.

ALOKA CO., LTD. **BOOTH: 525**

Aloka is a Japanese company which has been developing, producing and supplying radiation measuring instruments for more than 50 years as an all-round manufacturer. We exhibit any cutting-edge instruments like handheld monitor with rugged scintillation detector ideal for contamination measurements.

ALPHA SPECTRA, INC. **BOOTH 426**

Alpha Spectra, Inc. Manufactures gamma-ray detectors for health physics, academic, industrial, medical and exploration applications. Scintillation materials used include most of the common phosphors e.g. NaI(Tl), BGO, Plastic etc.

AMERICAN NUCLEAR SOCIETY **BOOTH 127**

The American Nuclear Society publishes Nuclear News, Radwaste Solutions, technical journals, standards and position statements. Its 11,000 members represent to the government and the public a unified voice in support of nuclear science and technology.

APANTEC LLC & FUJI ELECTRIC **BOOTH: 506**

Fuji Electric Systems and Apantec LLC are pleased to announce a newly formed relationship and will jointly display and offer a broad line of radiation monitoring instrumentation products including: dosimeters, survey instruments, contamination monitors, wireless and fixed area monitors, emergency response equipment, gaseous/liquid effluent rms systems, rms tracking & trending software and nuclear, biological, and chemical (cbrne) training services. Please stop in to see what we have!

APPLIED HEALTH PHYSICS, INC. **BOOTH: 109**

Applied Health Physics, Inc. (AHP) has been providing quality radiological safety and consulting services to users of ionizing radiation for over forty-five years. Services provided include training, instrument calibration, laboratory analysis, emergency response, disposal and general consulting.

ARROW-TECH INC. **BOOTH: 113**

Arrow-Tech, Inc. is the manufacturer of the Direct-Reading Dosimeter. Arrow-Tech handles a full line of radiation detection equipment and maintains customers throughout the world providing quality, reliable, durable products and service. Industries served include the Health Physics, Homeland Security, NDI, Industrial & Medical Radiology and 1st Responders. Arrow-Tech provides calibration services.

BERKELEY NUCLEONICS CORP. -POLINUCLEONICS **BOOTH: 126**

Precision electronic instrumentation for test, measurement and nuclear research.

BIONOMICS, INC. **BOOTH: 510**

Radioactive and mixed waste dispersal services.

BLADEWERX LLC. **BOOTH: 222**

Bladewerx and its subsidiary Shieldwerx provide instrumentation, custom software, neutron and gamma shielding, and neutron activation foils to the radiation protection and measurement industry.

CANBERRA INDUSTRIES BOOTH: 200

Canberra is the world's leading supplier of analytical instruments, systems and services for radiation measurement. Applications for Canberra offerings include health physics, nuclear power operations, Radiation Monitoring Systems (RMS), nuclear safeguards, nuclear waste management, environmental radiochemistry and other areas.

The new Canberra has the broadest array of Health Physics capabilities in the industry. HP related products include a full range of gamma and alpha spectroscopy equipment, personnel contamination monitors, hand held survey instruments for alpha, beta, gamma and neutron measurement, whole body counters and area monitors. The company also offers a full range of services including repair and maintenance, training and expert data review.

CAPINTEC, INC. BOOTH: 503

Capintec, Inc. is a leading manufacturer of high quality radiation detection and measurement instruments for medical applications. Capintec also manufactures protective shielding equipment and devices for radiological and emergency response needs.

CELLULAR BIOENGINEERING, INC. BOOTH: 203

Decon Gel[TM] is a one component, water-based, broad application, peelable decontamination hydrogel that lifts, binds and encapsulates contaminants into a rehydratable polymer matris. Safe and use friendly, Decon Gel[TM] can be used for radiological decontamination of radioisotopes as well as particulates, heavy metals, water-soluble and insoluble organic compounds (including tritriated compounds). The product can easily be applied to a wide variety of horizontal, vertical, and inverted surfaces.

CHASE ENVIRONMENTAL GROUP INC. BOOTH: 300

Chase Environmental Group, Inc. is a full-service, decontamination, decommissioning, remediation, and waste management firm, providing safe, high quality, practical, cost effective solutions to your environmental needs.

CHESAPEAKE NUCLEAR SERVICES INC. BOOTH: 515

Licensed to perform radiological surveys and decommissioning activities nationwide. MARSSIM practitioners. Program management, licensing support. Technology applications for effluents, tritium-in-groundwater, operational and environmental gamma spectral characterization. Proprietary wireless radionuclide detection/mapping system - MARSS Responder - for characterization and emergency response.

CHP CONSULTANTS BOOTH: 326

CHP Consultants offers products and services relating to radiation safety, radiation dosimetry, dose reconstruction, nuclear decommissioning, nuclear medicine, operational Health Physics, etc.

CLEAN HARBORS ENVIRONMENTAL SERVICES BOOTH: 219

Clean Harbors Environmental Services is North America's leading provider of environmental and hazardous waste management services. Our services include field services and emergency response, industrial services, laboratory chemical packing and waste transportation and disposal. Visit us at www.cleanharbors.com

CONFERENCE OF RADIATION CONTROL PROGRAM DIRECTORS, INC. BOOTH: 507

Conference of Radiation Control Program Directors, Inc. is a nonprofit, nongovernmental professional organization that promotes consistency in addressing and resolving radiation protection issues,

encourages high standards of quality in readiation protection programs, and provides leadership in radiation safety and education.

CROWE AND COMPANY, LLC **BOOTH: 124A**

Crowe and Company, LLC, a woman-owned, small business providing Chemical, Biological, Nuclear, Radiological, and High Yield Explosives equipment distribution and consulting, is the exclusive Distributor of JP Laboratories, Inc., for the SIRAD family of products in the United States for use by the general population, nuclear power plants, city, county, state and federal governments.

DADE MOELLER & ASSOCIATES **BOOTH: 323**

Dade Moeller & Associates (www.moellerinc.com) is a nationally-recognized consulting firm specializing in radiological & nuclear safety, public & environmental health protection, occupational safety & health, and radiation safety training. We provide the full range of professional and technician services in radiation protection, health physics, and worker safety to government and commercial nuclear clients.

ECKERT & ZIEGLER ANALYTICS **BOOTH: 209**

Eckert & Ziegler Analytics provides custom NIST-traceable radioactivity standards for the calibration of alpha, beta, and gamma-ray counting systems. Radiochemical performance evaluation samples are provided quarterly for effluent and environmental monitoring programs.

ECKERT & ZIEGLER ISOTOPE PRODUCTS **BOOTH: 211**

Eckert & Ziegler Isotope Products, established in 1967, supplies quality control standards for nuclear imaging, reference and calibration, health physics, and industrial applications. Featured are solutions, mutinuclide, large volume and particle standards and sources for research applications.

ECOLOGY SERVICES INC. **BOOTH: 205**

Ecology Services, Inc. specializes in LLRW and mixed waste management, decommissioning services, and health physics consulting.

ENERCON SERVICES, INC. **BOOTH: 123**

ENERCON Services, Inc. is an engineering, environmental, technical, management and radiological services firm providing a broad range of professional services to private and government sector clients throughout the United States.

ENERGY SOLUTIONS INC. **BOOTH: 310**

Energy Solutions, LLC is the largest nuclear oriented services company in the U.S. We provide radiological services and solutions, including surveys, health physics consulting, and radioactive waste management, treatment, and disposal to commercial and government organizations dealing with radioactive material.

EV PRODUCTS **BOOTH: 226**

eV PRODUCTS develops and manufactures nuclear radiation measurement detectors. The iGEM™ Spectroscopy System is a plug and play radiation analysis tool that provides qualitative measurements about radiation sources. Simply plug into your PC and collect gamma-ray spectral measurements. Hand held, portable and intelligent, the iGEM™ SS is ideal for most laboratory, field research and educational studies.

F&J SPECIALTY PRODUCTS, INC. **BOOTH: 422**

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FEMTO-TECH, INC. BOOTH: 504

Femto-TECH, INC. is a leader in the design and manufacture of continuous radon monitors and real time tritium instrumentation.

FLUKE BIOMEDICAL BOOTH: 107

Fluke Biomedical provides the latest technology in radiation detection meters available with wireless capability. The Victoreen® ASM 990 Series Survey Meter excels in detecting radioactive contamination. The 451P/B Ion Chamber Survey Meters perform high-sensitivity measurements of exposure and exposure rate. Our highly accredited Global Calibration Laboratory provides a one-stop service for all radiation, calibration and repair needs.

G/O CORPORATION BOOTH: 513

G/O Corporation is a supplier of both nuclear and industrial safety equipment. G/O provides health physics supplies, rad-waste reduction items, many custom signage and barrier products

GAMMA PRODUCTS, INC. BOOTH: 424

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GRIFFIN INSTRUMENTS BOOTH: 114

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HEALTH PHYSICS INSTRUMENTS BOOTH: 100

Health Physics Instruments manufactures instruments and devices that measure gamma, neutron, beta, and alpha radiation. The line includes portable Geiger-counters through sophisticated fixed monitors, rem meters, and multi-channel analyzers. HPI has been serving the Health Physics community for over 35 years.

HI-Q ENVIRONMENTAL PRODUCTS CO. BOOTH: 401

HI-Q Environmental Products Company has been a leading Manufacturer of Air Sampling Equipment, Systems & Accessories since 1973. Our product line includes: Continuous duty high & low volume air samplers, air flow calibrators, radioiodine sampling cartridges, collection filter paper, combination filter holders, and complete stack/fume hood sampling systems including the Shrouded Probe designed per ANSI N13.1 1999.

HOPEWELL DESIGNS, INC. BOOTH: 304

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HPS PUBLICATIONS REGISTRATION AREA

ICX RADIATION BOOTH: 213

ICx Radiation is a leading supplier of digital and analog spectroscopy systems for both laboratory and in-field use. ICx Radiation offers products from hand-held spectrometers the side of a PDA to radiation detection systems integrated on crane grabs.

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IRSC provides comprehensive regulatory support to manufacturers and distributors of products containing radioactive sources. We assist clients with compliance issues such as licensing, audits, and

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J. L. SHEPHERD & ASSOCIATES **BOOTH: 521**

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K & S ASSOCIATES **BOOTH: 522**

K & S Associates, Inc. is accredited by the American Association of Physicists in Medicine, the Health Physics Society and the American Association of Laboratory Accreditation (ISO17025: 2005) to include therapy, brachy, diagnostic, survey meter, kVp, mAs, light meters, TLD measurements, etc.

LAB IMPEX SYSTEMS LTD. **BOOTH: 201**

Instruments for Alpha-Beta Continuous Air Monitoring (the SmartCAM), Area Gamma Monitoring, Noble Gas Monitoring and Iodine Monitoring. Complete systems for Stack and Duct Monitoring and Facility wide networks. Applications within Nuclear, Industrial and PET.

LANDAUER INC. **BOOTH: 406**

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LASER-PROFESSIONALS INC. **BOOTH: 502**

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LOS ALAMOS NATIONAL LABORATORY/OFFSITE SOURCE RECOVERY PROJECT **BOOTH: 112**

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LUDLUM MEASUREMENTS, INC. **BOOTH: 423**

Ludlum Measurements, Inc. will be displaying instrumentation used to detect and measure nuclear radiation.

MACTEC, INC. BOOTH: 104

MACTEC routinely saves clients time and money by providing world-class regulatory and nuclear decommissioning program support. Using our proprietary processes and advanced technologies, we not only develop cleanup alternatives, we also execute and manage performance to meet goals and acquire regulatory approvals.

MGP INSTRUMENTS BOOTH: 216

MGP Instruments provides a full range of instrumentation and engineering services for health physics applications and radiation monitoring systems. We are more than just a leader in technology. We are also recognized for our outstanding customer support.

MHF LOGISTICAL SOLUTIONS BOOTH: 215

MHF Logistical Solutions, Inc. (www.mhfls.com) is an asset-based, vertically integrated logistics provider that offers seamless solutions for generators and shippers of radioactive, hazardous and non-hazardous waste, materials and byproducts. The company's customers include government agencies, such as the U.S. Army Corp of Engineers, the U.S. Department of Defense, the U.S. Department of Energy and others. MHF-LS also provides transportation and logistics solutions to companies in the nuclear utilities, environmental services, mining, metals, and chemical and petrochemical industries.

MJW CORPORATION BOOTH: 405

MJW Corporation Inc. provides a variety of radiological consulting services as well as innovative software solutions for health physics and other technical industries. The Radiological Division of MJW specializes in internal dose assessment, reconstruction and radiological and health physics services for private industry and government agencies. MJW's software line brings state-of-the-art applications to health physics, nuclear related fields, and all aspects of emergency preparedness, disaster recovery, asset management and pre-risk mitigation. Collaboration between the multimedia and radiological divisions keeps MJW on the front line of flourishing technological progress. Check out our updated product page at http://www.mjwcorp.com or call us toll-free at 1-888-MJWCORP for more information.

MJW TECHNICAL SERVICES INC. BOOTH: 407

MJW Corporation Inc. provides a variety of radiological consulting services as well as innovative software solutions for health physics and other technical industries. MJW's software line brings state-of-the-art applications to health physics, nuclear related fields, and all aspects of emergency preparedness, disaster recovery, asset management and pre-risk mitigation. The Radiological Division of MJW is a professional consulting firm specializing in radiological and health physics services for private industry and government agencies. Collaboration between the multimedia and radiological divisions keeps MJW on the front line of flourishing technological progress. Check out our updated product page at http://www.mjwcorp.com or call us toll-free at 1-888-MJWCORP for more information.

NAS (NORTH AMERICAN SCIENTIFIC) BOOTH: 308

NAS is a manufacturer of radioactive 'reference' sources used to calibrate a variety of equipment in such fields as nuclear medicine, biotechnology, environmental safety, and industrial research.

NATIONAL INFRASTRUCTURE PROTECTION PLAN-NUCLEAR SECTOR BOOTH: 208

The Nuclear Sector supports national security, public health and

safety, public confidence, and economic stability by enhancing its existing high level of readiness to promote security and lead by example to improve the Nation's overall critical infrastructure readiness.

NRRPT **BOOTH: 224**

To encourage and promote the education and training of radiation protection technologists and, by so doing, promote and advance the science of health physics.

NUCLEAR ENERGY INSTITUTE **BOOTH: 118**

NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues.

OAK RIDGE ASSOCIATE UNIVERSITIES **BOOTH: 519**

ORAU provides a variety of services in the radiological sciences: training, environmental surveys, decommissioning. epidemiology, and emergency response.

ON SITE SYSTEMS, INC. **BOOTH: 223**

On Site Systems, Inc. is a software development company with a single focus, Environmental Health and Biological, Chemical and Radiological Safety Data Management software, both client-server and Web based applications. The EH&S Assistant is a centralized database and safety management system providing comprehensive compliance documentation. The Health Physics Assistant helps the RSO efficiently meet federal, state and local requirements for managing the safe use of radioactive material.

ORTEC **BOOTH: 416**

ORTEC has over forty years of experience providing solutions for a wide variety of Nuclear Detection Applications. Our team of highly qualified scientists and engineers are dedicated to providing measurement system solutions for Homeland Security, Waste Management, Personal Monitoring, In-Situ measurements, and Radiochemistry Laboratory Applications. Visit our booth today and allow us to assist you with your Nuclear Detection needs.

PACE ANALYTICAL SERVICES, INC. **BOOTH: 217**

Pace Analytical's Radiochemistry Laboratory offers comprehensive radiochemical analytical services including measuring radioactivity in drinking water, power plant material, nuclear waste and environmental matrices.

PACIFIC NORTHWEST NATIONAL LABORATORY **BOOTH: 517**

Pacific Northwest National Laboratory offers radiological calibration and testing services, including: dosimeter irradiations, survey instrument repair and calibration, instrument type testing, alpha and beta source recertification, transfer standard calibration, medical seed evaluations, research irradiations, and high dose irradiations. Visit us at http://cra.pnl.gov.

PERKIN ELMER LIFE AND ANALYTICAL SCIENCES **BOOTH: 225**

PerkinElmer, a global leader in Health Sciences, provides instruments, reagents, software and services for drug discovery/development, genetic screening, environmental testing, quality assurance, and health sciences end markets. Our fully integrated solutions enhance productivity, optimize performance, accelerate time-to-market and ensure quality of results for pharmaceutical, biotech, academic research, clinical screening, environmental, and other high-growth markets.

PERMA-FIX ENVIRONMENTAL SERVICES **BOOTH: 511**

Perma-Fix Environmental Services provides turnkey hazardous, low-level radioactive and mixed waste treatment services at our fully licensed and permitted facilities. These services offer our customers with the most comprehensive hazardous, radioactive and mixed waste treatment services capabilities in the U.S.

PHILOTECHNICS, LTD. **BOOTH: 318**

LLRW and Mixed Waste brokerage services, HP services including D&D, license terminations, etc., and industrial hygiene services.

PROTEAN INSTRUMENT CORPORATION **BOOTH: 302**

Protean Instrument Corporation is a leading supplier in high performance alpha/beta counting systems and the only company 100% dedicated to the manufacture of these systems. We manufacture a wide range of models, including automatic, manual, single detector, multi-detector, windowed and windowless. We deliver twice the performance

QAL-TEK ASSOCIATES **BOOTH: 110**

Qal-Tek Associates provides these professional services: Radiation instrumentation calibration & maintenance, radiological safety consulting, disposal of radioactive sources, dose reconstruction & assessment studies, emergency response services, leak testing, radiation program assessment management, shielding studies & design, radiation safety training, x-ray machine inspections, other technical services upon request.

QSA GLOBAL **BOOTH: 409**

QSA Global's Isotrak brand manufactures high quality sources for the calibration of radiation measurement instruments. Isotrak offers a complete range of NIST-traceable Reference Sources for Homeland Security applications (ANSI N42.35/38) and a range of instruments like the Teletector 6112B/M and RAD60

RADIAC ENVIRONMENTAL SERVICES **BOOTH: 324**

Radiac operates a fully permitted radioactive waste brokerage, storage and transfer facility along with its own transportation fleet. We address all aspects of radioactive waste disposal including mixed waste, sources, material transfers and remediation.

RADIATION SAFETY & CONTROL SERVICES INC. **BOOTH: 212**

RSCS provides world class project management, field services, and products to a wide range of radiological and nuclear companies. We specialize in radiological characterization and work planning, licensing, groundwater, and instrumentation services for operating and decommissioning sites. Our products include radiological instruments and specialty software for users of radioactive material.

RADIATION SAFETY ASSOCIATES, INC. **BOOTH: 524A**

Radiation consulting services, radiochemical analysis/lab services, instrument calibration & repair, decontamination & decommissioning, professional publications (journals & reference books) and software and detection equipment for HPs.

RISK ASSESSMENT CORPORATION **BOOTH: 322**

Risk Assessment Corporation (RAC) specializes in human health issues from chemicals and radionuclides in the environment. Services include: Exposure and risk analysis; Contaminant transport modeling; Technical review and audit; Risk communication; Training courses.

RSO, INC **BOOTH: 210**

RSO, Inc. (RSO) provides radiation safety services and products to support universities, hospitals, other health industry, biotechnology research/development, portable and fixed radioactive gauge/device users and manufactures, and other industrial

users of radioactive materials and radiation sources. RSO provides a comprehensive approach to the radiation safety needs of clients that includes license applications, radiation safety program development, health physics support services, radioactive sample analysis, survey meter calibration, radioactive waste management, and sales of products for radiation safety.

S.E. INTERNATIONAL, INC. **BOOTH: 526**

S.E. International, Inc., manufacturer of the Radiation Alert® product line, offers handheld ionizing radiation detection instruments including Geiger counters, dosimeters, and multi-channel analyzers for surface and air contamination. Proven reliable in environmental, industrial, laboratory, research, Health physics, educational fields. Stop by to see the new wireless Abacus.

SAINT-GOBAIN CRYSTALS, SCINTILLATION PRODUCTS **BOOTH: 102**

Saint-Gobain Crystals provides innovative solutions that convert ionizing radiation to a format that enables our customers to add value to their detection and imaging systems. Notable brands include Bicron, Gamma Labs and our new BrilLanCe® and PreLude®420 scintillators.

SCIONIX **BOOTH: 206**

Scionix produces custom made detectors employing Scintillation Crystals and Materials. Our key themes are a quick interaction on new scientific developments regarding materials and detection techniques with a close collaboration with the end users.

SOLUTIENT TECHNOLOGIES, LLC **BOOTH: 108**

Solutient provides full-scale radiological and hazardous waste management services including facility decontamination and decommissioning utilizing MARSSIM criteria, site remediation, waste management services and brokerage operations, risk assessment and risk management services, and licensing assistance for our government and commercial clients.

SPECTRUM TECHNIQUES BOOTH: 312

Gross Counting with Geiger-Mueller and NaI(Tl) detector systems. Spectroscopy with Multi-channel Analyzers for NaI(Tl) detector systems. Exempt Quantity Sealed Radioactive Sources. Nominal and calibrated Gamma. Nominal Alpha and Beta. Isotope Generator. www.spectrum techniques.com

TECHNICAL ASSOCIATES BOOTH: 403

Recent additions to TA's Health Physics instrument line include air and area monitors, which are smarter, more sensitive and more rugged than previously available, in addition to pipe and plume and the latest advances in portables.

TELEDYNE BROWN ENGINEERING **BOOTH: 316**

TBE Knoxville Laboratory offers a broad spectrum of radioanalytical services including waste characterization (Utah certified), bioassay and environmental sample analysis. TBE provides support to waste processors and a host of nuclear power customers.

TELETRIX CORPORATION **BOOTH: 427**

Teletrix is the country's leading manufacturer of Radiation Training Simulators. Simulated Meters, Probe Paks and Alarming Dosimeters provide the ability to generate radiation readings without using sources in a completely simulated training environment for the ultimate in hands-on learning.

THERMO FISHER SCIENTIFIC **BOOTH: 400**

Thermo Fisher Scientific offers a complete line of dosimetry detectors and readers to ensure high-quality measure-

ments in health physics applications. Our product line ranges from TLD instrumentation to networkable instruments and portals which allow for remote data monitoring, enhanced reporting capabilities and fast scanning ability to a portables line that is scalable to fit your personal monitoring requirements. We set the standard for active and passive dosimetry. Our products provide unequalled radiologic performance and protection. For more information and descriptions of our instrumentation lines can be found at www.thermo.com/rmp.

THOMAS GRAY & ASSOCIATES INC. **BOOTH: 207**

Thomas Gray & Associates, Inc., also representing Environmental Management & Controls, Inc. (EMC) and RWM-Utah, Inc. offers a full line of Health Physics services including LLRW disposal, consolidation, transportation, site remediation and HP services.

UNITECH SERVICES GROUP **BOOTH: 327**

UniTech Services Group, Inc. is the world's largest supplier of nuclear protective clothing and accessories. Our nuclear licensed decontamination facilities throughout the US and Europe provide the following services: Radiological laundering of protective clothing, decontamination and testing of respirators, and the Decontamination of tools & equipment (scaffolding, hand tools, portable HEPA vacuums, etc.) Our Products and services are designed to provide our customers cost effective protection of their workers with Minimal generation of radioactive waste. We also provide an onsite Mobile Safety Store for emergency supplies.

US NAVY RECRUITING **BOOTH: 125**

US NUCLEAR REGULATORY COMMISSION **BOOTH: 124**

The mission of the U.S. Nuclear Regulatory Commission is to regulate the civilian use of nuclear power and nuclear materials to protect the health and safety of the public, the environment, and the nation. NRC monitors, enforces, and protects nuclear power plants that generate electricity as well as universities and hospitals that use nuclear materials.

WILLIAM B. JOHNSON **BOOTH: 111**

Johnson carries a complete line of field tested gieger survey meters. Our meters use a wide range of probes which will detect aplha, beta and gamma radiation. Our probes and meters are interchangeable.

P.62 Evaluation of the NCRP wound model using USTUR plutonium-contaminated wound cases

Germann, L.K., Brey, R.R., James, A.C.
Washington State University, Idaho State University

During 2007, the National Council on Radiation Protection (NCRP) published report No. 156 entitled, "Development of a Biokinetic Model for Radionuclide-Contaminated Wounds for Their Assessment, Dosimetry and Treatment." This model represents the first formal attempt to develop a conceptual model of the pathways and processes determining radionuclide retention in a wound and associated lymph nodes, and the time-dependence of uptake into the systemic circulation. By necessity, however, the transfer rates recommended for specific types of material were derived primarily from experimental animal data. For practical health physics application (intake assessment), NCRP represented their predicted overall wound retention as a function of time by equivalent sums of exponential retention functions; with recommended (default) parameter values meant to characterize retention and systemic uptake of material in several different chemical and physical forms. This study examines how well NCRP's recommended default retention parameters for plutonium solution chemistry (strong, avid, particle and fragment retention) represent systemic plutonium uptakes in several voluntary tissue donors to the U.S. Transuranium and Uranium Registries (USTUR).

P.63 Implementation of the ICRP 2007 Recommendations in Korea

Cho, K-W.
Korea Institute of Nuclear Safety

International Commission on Radiological Protection (ICRP) is about to publish new recommendations on radiation protection. International Atomic Energy Agency (IAEA) is also under process in revising its International Basic Safety Standards (BSS) to take into account of the changes of the ICRP recommendations. As soon as the revision of the BSS is completed, Korean government is considering to incorporate those changes in the BSS and the ICRP recommendations into its national radiation protection laws and regulations. This paper introduces the current activities and future prospects in this matter.

In the 2007 ICRP recommendations, there are some new concepts, principles and quantities such as the changes in the nominal risk coefficient for cancer and hereditary effects, new definitions on the tissue weighting factors and radiation weighting factors for neutron and proton, extended application of the dose constraints in all exposure situations in source-related radiation protection, and the introduction of new system of protection for non-human species

Based on the study carried out by KINS so far, the following points are identified as major areas that need for further in-depth review and consideration for the implementation of the ICRP 2007 recommendations into Korean radiation protection laws and regulations; changes in the radiation risk factors, radiation weighting factors and tissue weighting factors, maintenance of the ICRP 60 dose limits, practical application of the dose constraints and

determination of the reference levels in many source to individual exposure relationships, change from process-based system to exposure situation-based system, strengthening of the principle of optimization in all exposure situations, system of radiation protection for the environment, practical application of the exclusion and exemption principles, active participation of the stakeholders, changes in glossary etc.

The study for the implementation of the ICRP 2007 recommendations into national legislations will be conducted until the end of 2012. In the meantime, draft regulations will be developed and the possible impact on the nuclear industry will also be analyzed and active involvement of the stakeholders including licensees will be encouraged in the entire process. The final draft of the revised laws and regulations will be issued in the early of 2013 and the formal legislation process of this final draft will commence in due course.

P.64 Development of Prompt Gamma Neutron Activation Analysis Facility at Texas A&M Nuclear Science Center Research Reactor for Trace Element Studies - Health Physics Challenges on Neutron/Gamma Radiation Levels and Shielding

Vasudevan, L., Inyang, O., Reece, D.
Texas A&M University

A facility for conducting Prompt Gamma Neutron Activation Analysis (PGNAA) is being developed at the 1 MW TRIGA Research Reactor at Texas A&M Nuclear Science Center (NSC). This facility utilizes the beam port located perpendicular to the north of the reactor and consists of external sample position with shielding, and a gamma spectroscopic system. This report furnishes details of the beam collimator design, beam catcher, sample geometry, and detector shielding. Neutron and gamma dose rates were monitored in the area around the beam port while the beam is ON and shielding materials were carefully chosen so as to reduce the scattered neutrons and gamma levels in the general area of the facility. The report also notes the radiation area controls implemented for this project. Boron and Hydrogen were the principal elements of interest; but provision for analysis of trace elements was being incorporated in the design. The average thermal neutron flux at the sample location was quantified by means of activated gold-alumium (Au-Al) foil with and without cadmium (Cd) covers. To establish the performance capabilities of the facility, irradiations of simple standards and pure foils were performed to identify the prompt gamma ray energies from the elements.

P.65 Environmental Protection Agency's Task-force on Research to Inform and Optimize Chemical Biological and Radiological Response

Hall, K., Drake, J., Hudson, S.
US Environmental Protection Agency, Cincinnati

In January 2007, the U.S. Environmental Protection Agency (EPA) established the Agency's Task-force on Research to Inform and Optimize Chemical Biological and Radiological Response (TRIO). The charter of TRIO is to focus National Homeland Security Research Center (NHSRC) research efforts on critical homeland security response needs. Meetings were held for the purposes of reviewing historical chemical, biological, and radiological (CBR) responses, looking at future response scenarios, developing a comprehensive list of needs, and identifying and prioritizing

specific projects from the needs list. TRIO work groups were established in four discipline areas: radiation safety, chemical, biological, and standardized methods. The TRIO work groups' main customer is EPA's response community. TRIO's approach is collaborative and uses consensus between EPA's NHSRC and EPA's Office of Solid Waste and Emergency Response (OSWER). Within TRIO, the radiological safety group is focusing on radiological response and decontamination efforts. The Rad Group has identified four projects which are currently being developed and researched with the goal of providing products which will be useful to OSWER's On-Scene Coordinators (OSCs). The projects include identification of technologies for stabilization of radiological contamination on buildings and urban surfaces; comprehensive citizen self-help products for use in a radiological response; guidance for decontamination of responder assets; and guidance to assist in radiological dispersion device preparedness and recovery planning. Research activities within NHSRC directly support the Homeland Security Presidential Directives which have helped to define EPA's homeland security role. These activities will create research products that fortify the knowledge base of EPA\'s OSCs participating in responses to radioactive materials releases as they make decisions about protective actions and recovery strategies.

P.66 The U.S. Army's Operation Iraqi Freedom Depleted Uranium Bioassay Screening Program

Szrom, F., Falo, G.A., Alberth, D.P.
US Army Center for Health Promotion and Preventive Medicine, Walter Reed Army Medical Center

The U.S. Army Center for Health Promotion and Preventive Medicine is the Army's focal point for depleted uranium (DU) bioassay screening of Operation Iraqi Freedom (OIF) Soldiers. Department of Defense and Army policies require Servicemembers with potential DU exposures to be assessed for intakes. For Army personnel, urine uranium bioassays are performed to determine potential intakes of DU. Inductively Coupled Plasma Mass Spectrometry (ICP-MS) analytical techniques are used to determine the uranium-238 concentration and the uranium 235/uranium 238 ratio in urine specimens. Screening began in June 2003 and continues today. As of March 2008 over 2200 Army personnel have been screened. The bioassay results for over 2200 personnel, the comparison to U.S. population urine uranium-238 concentrations, and the radiation dose based screening concentrations are graphically presented. Depleted uranium has been found in the urine specimens from 8 of the individuals screened. For one of these cases, the bioassay data are assessed with the recently published NCRP wound model (NCRP Report No. 156). The Army population of urine uranium-238 concentrations (over 2200 individuals) is comparable to the U.S. 20 years and older, uranium-238 concentration population as reported by the Centers for Disease Control and Prevention, National Center for Environmental Health, Third National Report on Human Exposure to Environmental Chemicals, National Health and Nutrition Examination Surveys, July 2005.

P.67 The Mobility of Radiocesium and Plutonium in Roach Lake in Southern Nevada

Tabriz, M., Hodge, V., Steinberg, S.
Yale University, University of Nevada, Las Vegas

The concentrations of several natural and artificial radionuclides were determined in the sediment from a dry lake in southern Nevada. Five sites (designated I through V) were selected in a dry lake called Roach Lake located in Ivanpah Valley about 41 miles west of Las Vegas, Nevada. The samples were analyzed for Cs-137 and other gamma emitting radionuclides using high purity germanium detectors. The plutonium analysis was performed, after chemical separation, by the detection of its alpha particles emissions with surface barrier detectors. Strontium-90 was determined at only one site , after extraction from the samples, by measuring its daughter yttrium-90 with a gas proportional counting instrument. In all of the locations, the concentrations of the natural radionuclides measured were relatively uniform throughout the core. In contrast, the activity of Cs-137 in site I was determined to be 0.302 pCi/g at the top layer gradually decreasing to to unmeasurable concentrations (less than 0.04 pCi/g) at 5 cm below the surface. Analysis of Pu-239,240 showed an activity of 0.012 pCi/g at the top layer gradually decreasing to an unmeasurable concentration at 8 cm below the surface. A similar concentration-depth profile was observed for Cs-137 and Pu-239,240 in site IV, which was also collected at 1 cm intervals. The strontium-90 analysis, which was performed only on core (I), was found in measurable amounts to 21 cm. Its activity in the top 9 cm was fairly uniform at about 0.06 pCi/g after which it started declining at 9 cm to an activity of about 0.02 pCi/g at the 21st cm layer from the surface. The Pb-210 dating of samples collected from location IV conclusively demonstrated that all of the excess lead-210 was in the top three to four centimeters - most in the uppermost 0.3 cm interval. Analysis of Bi-214 suggests constancy in the Ra-226 concentration up to the surface and thus indicates atmospheric origin of the excess Pb-210. Total activity of Cs-137, 15.5 and 9.4 mCi/km2 for cores I & IV respectively, and a total activity of Pu-239, 0.725 and 0.611 mCi/km2 for cores I & IV respectively compares to the global average inventory of 65± 20 mCi/km2 Cs-137 and 1.8± 0.05 mCi/km2. The lower values in the dry lake are possibly an indication of the loss of these nuclides from the lake bed or lower input due to the dry climate which would limit washout of these nuclides from the atmosphere (low rainout). The comparison of the Pu:Cs activity ratio, 0.049 for core I and 0.062 for core IV, results in much higher values than the global ratio of 0.028± 0.004, which indicates the fact that the Cs-137 may be removed from the dry lake at a higher rate than Pu-239,240 or the original fallout was not typical of the worldwide fallout but had a higher plutonium concentration, possibly due to testing at the Nevada Test Site.

P.68 Dosimetric evaluation of 142Pr glass applicator for the treatment of eye plaques in large animals - A feasibility study

Jung, J., Vasudevan, L., Reece, W., Walker, M.
Texas A&M University

Several beta-emitting nuclides were evaluated based on half lives, thermal neutron absorption cross sections, reusability, and radiation safety for personnel working around large animals during treatment. 142Pr among them was selected as an isotope of

choice due to its large thermal neutron cross section and 2.2 MeV max energy beta. Moreover, 142Pr glass applicator with a handling probe is reusable and can be easily re-activated in a research nuclear reactor when needed. This report details the dosimetric evaluation of 142Pr glass applicator for use in the treatment of eye plaques in large animals. The proposed design of the eye applicator probe considered was of square geometry 1 cm x 1 cm x 2 mm thick with slight rounded corners and with smooth edges so as not to injure the eye. The square geometry opposed to conventional spherical geometry will simplify the treatment planning process. Each probe needs to have a slight concave surface on the applicator side to conform to the mild curvature of the surface of the eyeball. Radiation protection for the clinical staff during radiation treatments on large animals can be accomplished by means of Plexiglas or other transparent beta radiation safety shield. Monte Carlo Transport Code (MCNP5) was used to calculate beta and gamma dose rate distributions in a simulated eye phantom. Dosimetric studies in water were performed in radial distances towards the center of the simulated eye from the surface of the eye. The surface dose rate with an initial activity of 0.3 Ci of 142Pr was expected to be about 190 cGys-1 which in turn delivers a total dose of 11,000 cGy at eye surface in one minute. The dose rates decrease about 50% for every 1 mm depth in soft tissue towards the center of the eye ball. After 6 mm depth, a significant decrease in the dose profiles was noted. The total dose calculated at 10 mm depth was 0.0001 of the surface dose. The dose rate expected from 142Pr applicator right behind a 2 cm beta shield was about 0.0055 cGys-1. Hence the dose rate for the clinical personnel standing at 30 cm or more during the treatment is insignificant.

P.69 Breakthrough Progress in the Design of a Traceable, but Robust and Affordable Beta Source for Contamination Monitors

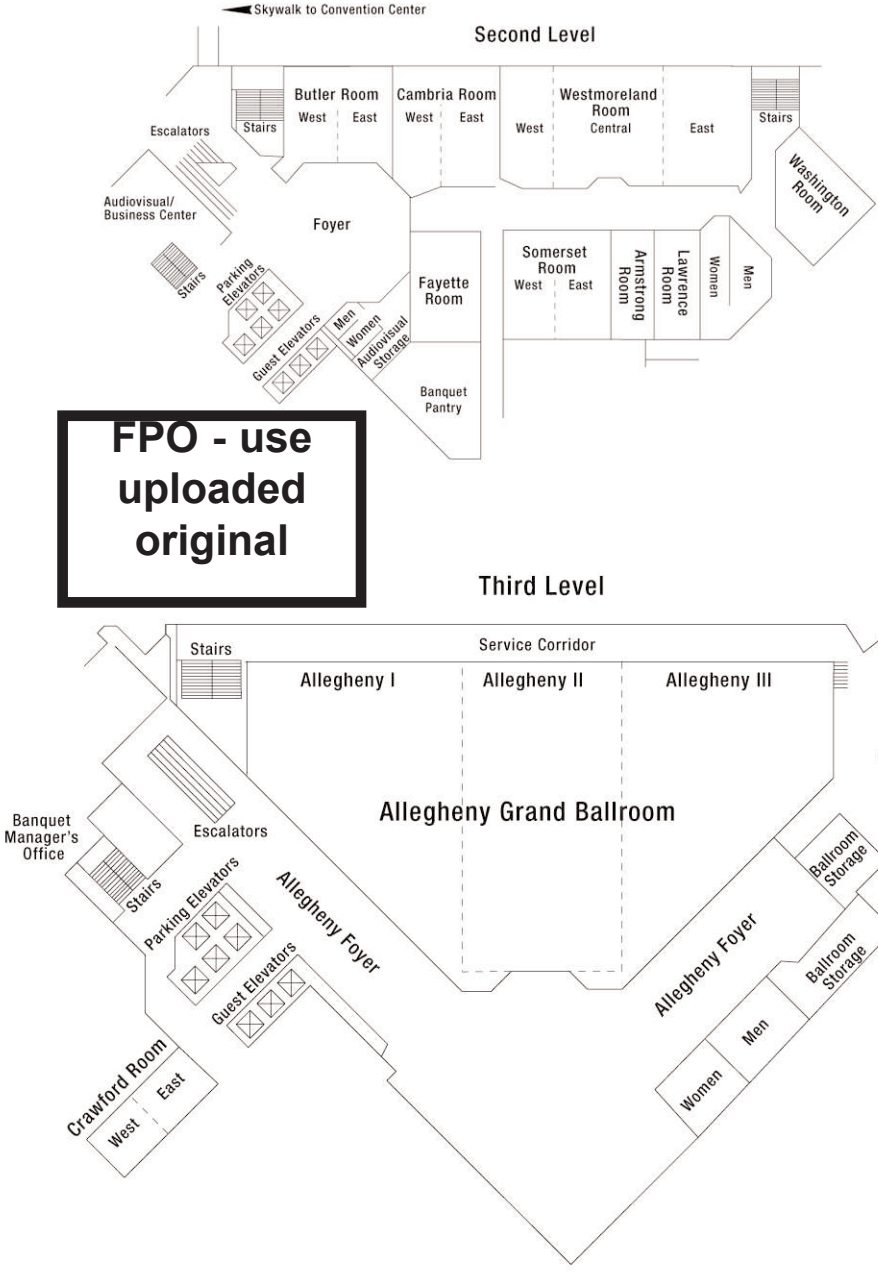
Iwatschenko-Borho, M.
Thermofisher

Conventional test sources for beta contamination monitors suffer from a number of inherent problems: Every source is an individual and unique item regarding activity and surface emission rate, both of which need to be individually measured in order to minimize the uncertainty of these quantities. Sources from different manufacturers may have different spectra of the emitted particles depending on the production process. Furthermore large area test sources may have variations of the emission rate over the different sections of the surface and in many cases the user needs to correct for the decay of the radioisotope. In all cases the thin active surface is a delicate part of the source for which swipe tests need to be performed on a regular basis in order to verify the integrity of the source. Recently an innovative series of test adapters based on high purity natural Lutetium-Oxide was developed which avoids all these mentioned disadvantages: The rare earth element Lutetium contains the isotope Lu-176 with 3,8E10 years half-life and a natural abundance of 2,6 %, which yields a specific activity of the pure element Lutetium of about 50 Bq/g. The available adapters contain up to 200 g of high density Lu2O3 ceramic material shaped to different dimension in order to minimize the necessary activity for testing the gamma radiation response of scintillation detectors and the energy calibration of gamma spectroscopic instruments. In respect to the new

application as a beta test source for surface contamination monitors, the unique feature of using a chemically pure bulk substance containing the radioisotope in its natural abundance results in a totally constant and homogeneous surface emission rate. Each and every source of the same surface area has the same beta emission rate, regardless of small variances of the thickness of the Lutetium-oxide ceramics. Absorption measurements show that the beta emission spectrum is very similar to Cs-137, but no individual source parameters need to be memorized and no decay correction needs to be performed. Furthermore, due to their natural origin and low specific activity, in respect to many national regulations and e.g. under US DOT or IATA rules for dangerous goods shipments, these adapters are not considered as radioactive material. The combination of all these unique features can help to facilitate the important frequent on-site performance verification of sensitive radiation detection equipment worldwide. These new test adapters will thus contribute to a reduction of calibration cost and instrument downtime, as well as to an increased user confidence and familiarity with “his” or “her” instrument.

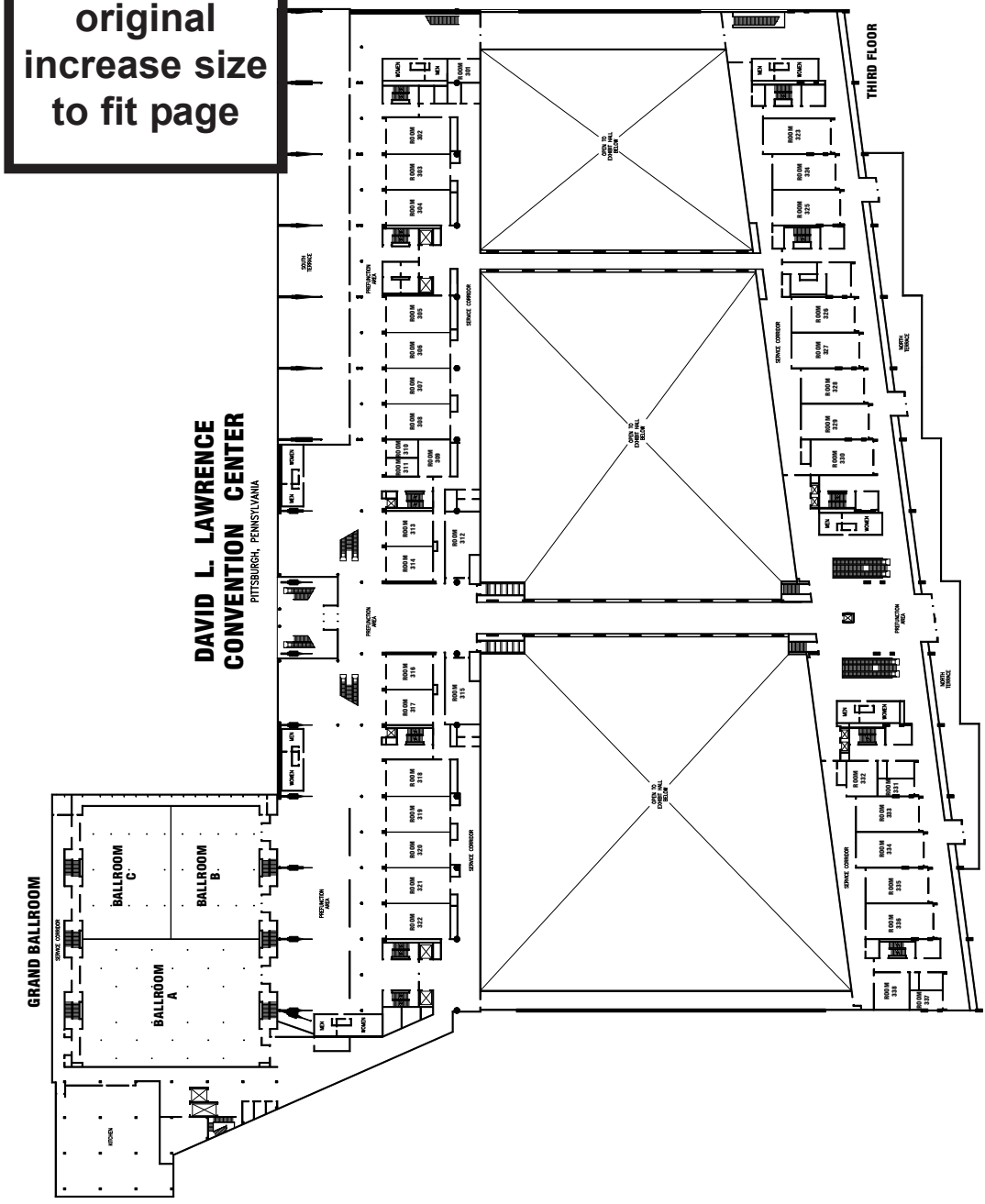
Health Physics Society Author Index 2008

Westin Pittsburgh Hotel Floorplan



David L. Lawrence Convention Center
Floorplan - Third Floor

FPO - use uploaded original increase size to fit page



David L. Lawrence Convention Center
Floorplan - Fourth Floor

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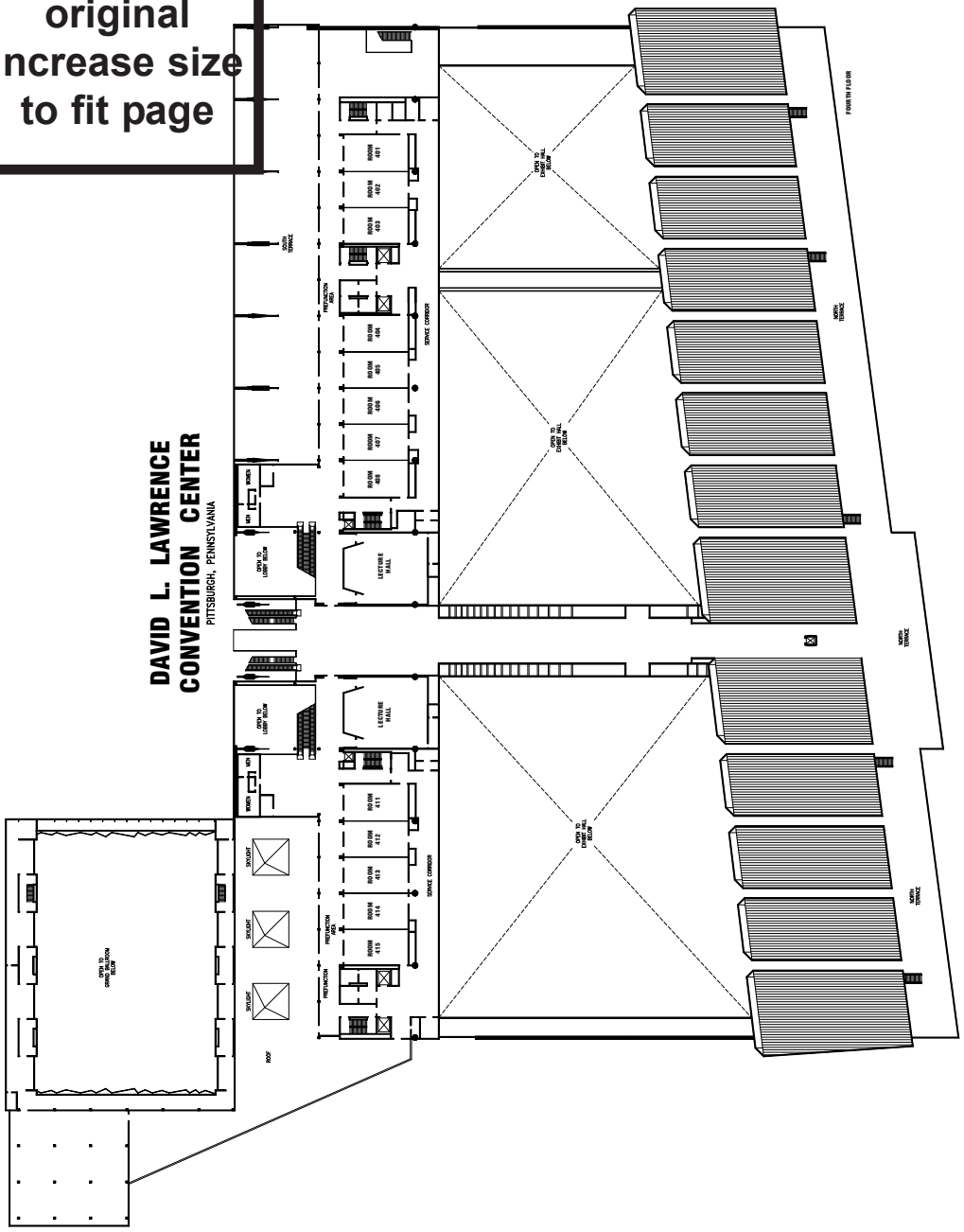

Saturday, July 12

All AAHP Courses are in the Westin Hotel

AAHP 1 Radiation Risk Communication – Tools for Helping People Understand Radiation
8:00 am-5:00 pm Cambria East/West (WH)

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 Butler East/West (WH)

AAHP 3 Developing & Demonstrat-ing Compliance with DCGLs for Subsurface Soils
8:00 am - 5:00 pm Crawford East/West (WH)

Sunday, July 13

All Sunday PEPs are at the Convention Center

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

Sunday PEP Rooms:
A - 301
B - 302
C - 303
D - 304
E - 305
F - 315
G - 316
H - 317

Welcome Reception
6:00-7:00 pm
Allegheny Ballroom (WH)

All Events are in the Convention Center or Westin Hotel (WH) as noted

Section Business Meetings
Tuesday
Reactor, 305, 10:15 am
Medical 408/409, 11:45 am
Accelerator, 406, Noon

Wednesday
Environmental, 305, 2:30 pm
Decommissioning, 401/402, 4:45 pm

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 Westmoreland (WH)

MAM-A ***Plenary Session***
8:10 am-12:05 pm Ballroom B/C

Lunch in Exhibit Hall for all Registrants and Opening of Exhibits
12:15 - 1:00 pm Exhibit Hall C

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 Westmoreland (WH)

HPS Chapter Council
1:00 - 2:00 pm 406

Poster Session
1:00 - 3:00 pm Exhibit Hall

MPM-A External Dosimetry
3:00-4:45 pm 401/402
MPM-B Homeland Security
3:00-4:45 pm 403/404
MPM-C Regulatory/Legal Issues
3:00-5:15 pm 406
MPM-D Operational Health Physics I
3:15-5:00 pm 407

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
7:00-8:00 am 407

TAM-A Environmental I
8:30-11:45 am 401/402

TAM-B Special Session: Radiological Hazard Assessment, Med Response, and Emer Planning Software Tools
8:30 am-Noon 403/404

Movies
8:30 am-Noon 405

TAM-C1 Reactor Health Physics
8:30-9:45 am 406

TAM-C2 Accelerator
10:15 am-Noon 406

TAM-D Special Session: AAHP - Radiation Accidents and Incidents — Lessons Learned
8:30 am-Noon 407

TAM-E Medical Health Physics I
8:45-11:45 am 408/409

AAHP Awards Luncheon
Noon-2:15 pm 411/412

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 Perfor-mance Measures. *303*
PEP T4 Neutrons- A Primer. *304*
PEP T5 Operational Accelerator Health Physics II. *305*

TPM-A Environmental II
2:30-5:00 pm 401/402

TPM-B Special Session: Radiological Hazard Assessment, Med Response, and Emer Planning Software Tools
2:30-5:00 pm 403/404

Movies
2:30-5:00 pm 405

TPM-C NESHAPs - Rad Air
2:30-5:00 pm 406

TPM-D Special Session: AAHP - Radiation Accidents and Incidents—Lessons Learned
2:30-5:15 pm 407

TPM-E Operational HP II
2:30-5:00 pm 408/409

AAHP Open Meeting
5:15 pm 407

HPS Awards Dinner & Recep
7:00-10:00 pm Allegheny Ballroom (WH)

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: PA'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*

HPS Business Meeting
5:30-6:30 pm *406*

WPM-E Adjunct Technical Session: Aerosol Measurements
6:00-8:30 pm *Westmoreland Central (WH)*

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
8:45-11:45 am *401/402*

THAM-B Emergency Planning/ Response
8:30-11:45 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

David L. Lawrence 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

Exhibit Hall

Monday	12:15 - 5:00 pm
Tuesday	9:30 am - 5:30 pm
Wednesday	9:30 am - Noon

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**

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 PEP courses are granted 4 CECs each;
* HPS 1 hour CELs are granted 2 CECs each.