Health Physics Society Midyear Meeting

Radiation Risk Communication to the Public

2010 Topical Meeting
Health Physics Society
(The Forty-Third Midyear Topical Meeting of the Health Physics Society)
American Academy of Health Physics

Sunday 24 January -
Wednesday 27January 2010

Final Program

Albuquerque, New Mexico
DoubleTree Hotel Albuquerque
Albuquerque Convention Center

Health Physics Society Committee Meetings

All meetings take place in the DoubleTree Hotel Albuquerque unless noted with (CC) for Albuquerque Convention Center

Saturday 23 January 2010

FINANCE COMMITTEE
8:00 - 10:30 am — *Moonstone*

ABHP PART II PANEL WORKSHOP
8:00 am - 5:00 pm — *Copper*

HPS EXECUTIVE COMMITTEE
Noon - 5:00 pm — *President's Suite*

Sunday 24 January 2010

ABHP PART II PANEL WORKSHOP
7:00 am - 6:00 pm — *Copper*

AAHP EXECUTIVE COMMITTEE
8:00 am - 5:00 pm — *Quartz*

HPS BOARD OF DIRECTORS
8:00 am - 5:00 pm — *Coral I*

TASK FORCE COMMITTEE
11:00 AM - 1:00 pm — *Estancia (CC)*

Monday 25 January 2010

HISTORY COMMITTEE
Noon-1:30 pm — *Nambe (CC)*

HOMELAND SECURITY COMMITTEE
Noon-1:30 pm — *Apache (CC)*

INTERNATIONAL COLLABORATIONS COMMITTEE
Noon-2:00 pm — *Acoma (CC)*

SCIENTIFIC & PUBLIC ISSUES COMMITTEE
3:00 - 4:30 pm — *President's Suite*

Tuesday 26 January 2010

CONTINUING EDUCATION COMMITTEE
Noon - 1:00 pm — *Tesuque (CC)*

AD HOC COMMITTEE ON COMMUNICATIONS & OUTREACH
Noon - 2:00 pm — *Nambe (CC)*

HPS 2020 AD HOC
1:00 - 3:00 pm — *Zuni (CC)*

ANSI/HPS N13.3 WORKING GROUP
1:00 - 4:00 pm — *Acoma (CC)*

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Registration Hours
SW Exhibit Hall Foyer

Sunday, January 24	3:30-6:30 PM
Monday, January 25	7:30 AM-3:00 PM
Tuesday, January 26	8:00 AM-3:00 PM
Wednesday, January 27	8:00 AM-Noon

Exhibit Hours
SW Exhibit Hall, Convention Center

Monday	5:30-6:30 PM	Opening Reception
Tuesday	9:30 AM-5:00 PM	Exhibits Open
	9:45-10:30 AM	Refreshment Breaks
	Noon	Lunch-Exhibit Hall
	3:15-3:45 PM	Refreshment Breaks
Wednesday	9:30 AM-Noon	Exhibits Open
	10:00-10:30 AM	Refreshment Breaks

Speaker Ready Room
Estancia, Convention Center

Sunday	1:00-5:00 PM
Monday & Tuesday	8:00 AM-Noon; 1:15-5:00 PM
Wednesday	8:00-11:00 AM

NIGHT OUT DINNER NATIONAL MUSEUM OF NUCLEAR SCIENCE & HISTORY

<u>Tuesday 26 January</u>

National Museum of Nuclear Science & History
6:00-10:00 PM
Onsite $73.00

Cash Bar, 6 PM, Dinner 7 PM. Museum exhibits open for viewing until 9 PM, when busses will return to the hotel.

The National Museum of Nuclear Science & History, opened in April 2009, is the nation's only congressionally chartered museum in its field and is an intriguing place to learn the story of the Atomic Age, from early research of nuclear development through today's peaceful uses of nuclear technology. It is a Smithsonian Affiliate member. Exhibits include the outdoor Heritage Park, complete with planes, rockets, missiles and cannons, The Uranium Cycle, Hiroshima and Nagasaki, a Cold War Fallout Shelter, Pioneers of the Atom, and the actual Packard limousine that Oppenheimer used to go between Los Alamos and the Trinity Site, where the first atomic bomb was tested. The Museum Store will be open for your convenience. Music for the evening will be provided by the Sons of the Rio Grande. Dinner will be a delightful 5-item New Mexican buffet provided by an Albuquerque favorite, Garduños (find out what natives mean when they say "gotta get my green chile fix"). Space is limited to 150, so sign up early!

TECHNICAL TOURS

<u>Wednesday 27 January</u>

Technical Tour of the Los Alamos Neutron Science Center (LANSCE)
7:00 AM-5:00 PM
Preregistration $48.00/Onsite $53.00

CANCELLED

A technical tour of the Lo[illegible]utron Science Center (LANSCE) is [illegible]E is a national user facility c[illegible]erimental areas that make use of [illegible]00-million-electron-volt (MeV) [illegible]erator. A tour of the accelerator and [illegible] experimental areas is planned. Depending [illegible]ailability, the tour will visit the isotope production facility, the Lujuan Neutron Scattering Center and its spallation target facility, the Proton Radiography facility, the Ultracold Neutron facility, and the Weapons Neutron Research facility. The tour will require considerable walking, use of stairs and ducking under equipment. Unfortunately only US citizens can be accommodated.

Ethicon Endo-Surgery Technical Tour
1:00-4:30 PM
Preregistration $40.00/Onsite $45.00

CANCELLED

Did you ever wonder where your doctors obtains the sterilized surgical instruments that they use (they rarely used boiled water anymore)? [illegible]s for a tour of Johnson & Johnson's Ethico[illegible]y Albuquerque instrument packagi[illegible]acility. You will see how the i[illegible]kaged and safely sterilized by [illegible] radiation in a modern, safe sett[illegible] see the pre-sterilized, packaged ins[illegible]ir movement on serpentine exposure room [illegible]eyor, the Co-60 source storage pool, and the radiation safety systems employed to ensure worker protection. The tour will be limited to 25 due to space constraints, so sign up early! (Due to proprietary considerations no Ethicon competitors, please.)

Technical Tour of Sandia National Laboratories Technical Area V
1:30-4:30 PM
Onsite $45.00

Sandia National Laboratories is pleased to offer a technical tour of our Nuclear Facilities operations area. The facilities within this area provide combined neutron/gamma radiation environments for radiation effects testing. The tour is limited to 16 people who are U.S. citizens. The tour will include: an overview presentation regarding the operation and purpose of the facilities plus a physical tour of the Annular Core Research Reactor, Sandia Pulse Reactor Facility and the Gamma Irradiation Facility. See how electronics are tested for the impacts of radiation and Cherenkov radiation from a reactor pulse and/or from the Gamma irradiation Facility.

ON YOUR OWN

Skiing -- In the winter, the vaulting Sandia Peak's 5,000-foot elevation gain over the city of Albuquerque provides the perfect amount of powder for action-packed alpine skiing and snowboarding. Hop on the Sandia Peak Tramway (the world's longest aerial tramway) and be dropped off for skiing in a matter of 15 minutes.

National Hispanic Cultural Center -- Recognized as one of the most culturally diverse cities in the country, Albuquerque's ethnic tapestry is reflected in its architecture, artwork, cultural centers and cuisine. Countless customs and traditions passed down over generations are a vibrant part of daily life in the city, and make Albuquerque an epicenter of authentic Southwestern culture. Albuquerque is home to more than the Native American, Hispanic, Latino and Anglo cultures for which New Mexico is well known. Our multicultural city includes strong African American, Asian, Middle Eastern and other ethnic communities, creating a unique and modern Southwestern blend. In fact, more than 70 different ethnicities call Albuquerque home.

Centuries of History -- The one-of-a-kind character of Albuquerque is the result of many different forces, perhaps none as important as the centuries of history that have shaped the city of Albuquerque, New Mexico. Starting with the Native Americans who have lived here for thousands of years and continuing through Albuquerque's official founding in 1706, the city has grown into a multi-cultural metropolis of nearly 800,000 people. While the modern city of Albuquerque is a center of high-tech industry and research, it retains vital connections to the past, such as the ancient rock carvings at Petroglyph National Monument, the historic Old Town Plaza and the trail of vintage neon signs along Route 66 spanning the city.

DOWNTOWN AND OLD TOWN ATTRACTIONS

Albuquerque Biological Park (http://www.cabq.gov/biopark/):

• The Albuquerque Aquarium takes visitors on a journey down the Rio Grande from Albuquerque to its mouth in the Gulf of Mexico. Fresh water riverine, estuarine, surf zone, shallow waters, coral reefs, open ocean and deep ocean species are represented along the way. Other highlights include an eel tunnel, seahorses, luminous jellies and a 285,000 gallon ocean tank where brown, sandtiger, blacktip and nurse sharks swim alongside brilliantly colored reef fish, eels, sea turtles and open ocean species.

• Located across the plaza from the Albuquerque Aquarium and bordered on the west by the famed Rio Grande and the largest cottonwood gallery forest in the world, the lush and peaceful **Rio Grande Botanic Garden** is an oasis in the desert.

• Founded in 1927, the 64-acre **Rio Grande Zoo** offers visitors close encounters with more than 250 species of exotic and native animals. Popular species include seals and sea lions, chimpanzees, gorillas, orangutans, elephants, polar bears, giraffes, hippos, camels, tamarins, koalas, Mexican wolves, mountain lions, monkeys, jaguars, zebras and rhinoceros. State-of-the-art exhibit design and eye-pleasing landscaping enhance zoo animal husbandry by creating naturalistic habitats with trees, grasses, water features and rockwork. Walking distance through the zoo is about 2.25 miles.

• **Tingley Beach** features three fishing lakes, a model boating pond and a train station with gift shop and food service.

Old Town -- Take a walk through history around Albuquerque's Old Town, the serene village that has been the focal point of community life since 1706. Quiet hidden patios, winding brick paths, gardens and balconies are waiting to be discovered. Wrought iron and adobe benches beckon you to rest in the shade and watch people stroll by. Visit historic San Felipe de Neri Church and relax in the Rose Garden. Shopping in Old Town is a truly delightful experience. Unique items from around the world, as well as those that are distinctly Southwestern, can be found in more than 150 shops, boutiques, galleries and artist studios. When in New Mexico - Eat like New Mexicans! Try delightful chile dishes which evolved from a combination of Indian and Spanish recipes, or enjoy one of the many restaurants featuring everything from the All-American hamburger to fine Continental cuisine. For almost three centuries Old Town has been the crossroads of the Southwest. It is a Historical Zone of the City of Albuquerque and home for many families whose ancestors founded the town. More information can be found at http://www.albuquerqueoldtown.com/.

Albuquerque Museum of Art and History -- The art collection of The Albuquerque Museum concentrates on works by regional artists, contemporary and historical. The collections include major holdings of paintings by the Taos Society of Artists as well as works by members of the Cinco Pintores and the Transcendental Painting Group, along with works in all media by contemporary regional, national and international artists. The Museum also features a sculpture garden, which is open all year. The History Division researches, collects, preserves, and exhibits the history of Albuquerque and the Middle Rio Grande Valley from the founding early Spanish settlements prior to the Pueblo Revolt in 1680 and the settlement of Albuquerque in 1706 to the present. More information can be found at http://www.cabq.gov/museum/welcome.html.

New Mexico Museum of Natural History and Science -- The Museum has eight permanent exhibit halls that take visitors on a journey through time referred to as "Timetracks" providing snapshots of New Mexico from the formation of the universe to the present day. Space Frontiers features the rich heritage and exciting future of space exploration in New Mexico. From ancient Native American observatories at Chaco Canyon to modern day facilities such as the Very Large Array astronomical radio observatory, New Mexico's clear skies and high altitudes have provided an ideal location to study the heavens. STARTUP is the first museum exhibition dedicated to the microcomputer - the little machine that revolutionized the way we live, work and play. The gallery features one-of-a-kind artifacts, video and interactive displays, including "Rise of the Machines" - an immersive multimedia theatre experience. The museum also has a DynaTheater and a Planetarium. More information can be found at http://www.nmnaturalhistory.org/index.html.

¡explora! -- Explora is a new kind of learning place, providing real experiences with real things that put people's learning in their own hands. Explora is part science center, part children's museum, part free-choice school, part grandma's attic, part grandpa's garage, part laboratory, part neighborhood full of interesting people, and part of many people's lives. More information can be found at http://www.explora.us/en/home/.

National Hispanic Cultural Center – The National Hispanic Cultural Center is dedicated to the preservation, promotion, and advancement of Hispanic culture, arts, and humanities. Since the grand opening in 2000, they have staged over 25 art exhibitions and 500 programs in the visual, performing, and literary arts. They provide venues for visitors to learn about Hispanic culture throughout the world. The beautiful campus is located along the banks of the Rio Grande in the historic Albuquerque neighborhood of Barelas. More information can be found at http://www.nhccnm.org/.

Holocaust and Intolerk - ance Museum of New Mexico -- Its purpose is to educate people about the Holocaust as well as to teach them about other genocides and forms of bullying that have affected people around the world. More information can be found at http://www.nmholocaustmuseum.org/.

American International Rattlesnake Museum -- You can earn an official "Certificate of Bravery" for visiting the new American International Rattlesnake Museum in Albuquerque's Old Town. Along both sides of a corridor stretching toward the back of the museum, rattlers reside in glass display cases featuring the decor of their native habitats. As you move down the corridor, peering into each enclosure, the snakes become aware of your presence -- some greet your arrival with the steady buzz of rattles at work. More information can be found at http://www.rattlesnakes.com/.

Turquoise Museum -- The Turquoise Museum and its collections of turquoise have been used as a source of information and pictures for over 40 years. Uncover the mystery of turquoise, delve into its rich history, learn about the different mines, specimens, and stories of colorful characters at The Turquoise Museum in Albuquerque, New Mexico. More information can be found at http://www.turquoisemuseum.com/.

ATTRACTIONS OUTSIDE OF DOWNTOWN AND OLD TOWN

Rio Grande Nature Center -- http://www.cabq.gov/aes/s1rgnc.html; a protected riparian habitat.

Sandia Peak and Tramway – http://www.sandiapeak.com/; the world's longest tram at 2.7 miles long

Petroglyph National Monument – http://www.nps.gov/petr/index.htm; with 3 locations on the West Side of Albuquerque, plus the Visitors Center.

Coronado State Monument – http://www.nmmonuments.org/inst.php?inst=4.

Anderson-Abruzzo Albuquerque International Balloon Museum http://www.cabq.gov/balloon/.

Unser Racing Museum – http://www.unserracingmuseum.com/.

Maxwell Museum of Anthropology – http://www.unm.edu/~maxwell/.

UNM Geology Museum – http://epswww.unm.edu/museum.htm.

Museum of Southwestern Biology – http://www.msb.unm.edu/ ; collections of vertebrates, arthropods, plants and genomic materials from the American Southwest, Central and South America, and from throughout the world.

Tinkertown Museum – http://www.tinkertown.com/.

RESTAURANTS

DOWNTOWN

American Cuisine

ABQ.Nick's Crossroads Cafe -- 400 Central Ave. S.W. (505) 242-8369

Cyprus Grille - Albuquerque Embassy Suites Hotel & Spa -- 1000 Woodward Pl. N.E. (505) 353-5345

Cafe Green -- 319 Fifth St. S.W. (505) 842-1600

Flying Star Cafe -- 2701 Broadway Blvd. N.E. (505) 255-1128

Gold Street Caffe -- 218 Gold Ave. S.W. (505) 765-1677

The Grove Cafe & Market -- 600 Central Ave. S.E. (505) 248-9800

McGrath's - Hyatt Regency Albuquerque -- 330 Tijeras Ave. N.W. (505) 842-1234

The Library Bar & Grill -- 312 Central Ave. S.W. (505) 242-2992

One Up Elevated Lounge -- 301 Central Ave. N.W. (505) 259-0406

Slate Street Café -- 515 Slate Ave. N.W. (505) 243-2210

Standard Diner -- 320 Central Ave. S.E. (505) 243-1440

Asian Cuisine

Sushi King -- 118 Central Ave. S.W. (505) 842-5099

Teriyaki Kitchen Co. -- 508 Central Ave. S.W. (505) 766-9405

Thai Crystal -Thai Cuisine -- 109 Gold Ave. S.W. (505) 244-3344

Bakery

Isabella's -- 200 Third St. N.W. (505) 244-9461

Coffee House

Caffeina's - Albuquerque Embassy Suites Hotel & Spa -- 1000 Woodward Pl. N.E. (505) 353-5345

Starbuck's - Hyatt Regency Albuquerque -- 330 Tijeras Ave. N.W. (505) 842-1234

Village Coffee Roaster -- 519 Central Ave N.W. (505) 242-4781

Continental/International Cuisine

Artichoke Cafe -- 424 Central Ave. S.E. (505) 243-0200

Sol Restaurant - Doubletree Hotel Albuquerque -- 201 Marquette Ave. N.W. (505) 247-3344

Tucanos Brazilian Grill -- 110 Central Ave. S.W. (505) 246-9900

Ice Cream

Sweet Berry -- 101 Gold Ave. S.W. (505) 242-1517

Mediterranean Cuisine

Zohra -- 20 First Plaza N.W. (505) 247-2323

Pizza

Farina Pizzeria -- 510 Central Ave. S.E. (505) 243-0130

JC's New York Pizza Department -- 215 Central Ave. N.W. (505) 766-6973

SLICES - a unique style pizza joint -- 102 Fourth St. N.W. (480) 899-6266

Deli

The Fix -- 319 Central Ave. N.W. (505) 247-4200

OLD TOWN

American

Shark Reef Cafe - Albuquerque Biological Park -- 903 Tenth St. S.W. (505) 764-6236

Seasons Rotisserie & Grill (Old Town) -- 2031 Mountain Rd. N.W. (505) 766-5100

Coffee House/Tea Room

Keep It Simple Stupid (KISS) Coffee (Old Town) -- 404 San Felipe N.W. (505) 243-3033

The St. James Tearoom (Old Town) -- 901 Rio Grande Blvd. N.W. (505) 242-3752

Continental

La Crepe Michel (Old Town) -- 400 San Felipe St. N.W. (505) 242-1251

New Mexican Cuisine

Golden Crown Panaderia (Neighborhood Bakery) (Old Town) -- 1103 Mountain Rd. N.W. (505) 243-2424

Albuquerque Bar & Grill - Best Western Rio Grande Inn -- 1015 Rio Grande Blvd. N.W. (505) 843-9500

Casa de Ruiz - Church Street Cafe (Old Town) -- 2111 Church St. N.W. (505) 247-8522

Duran Central Pharmacy (Old Town) -- 1815 Central Ave. N.W. (505) 247-4141

Cafe Plazuela - Hotel Albuquerque at Old Town - A Heritage Hotel & Resort -- 201 Third St NW (505) 998-5426

Cafe Plazuela - Hotel Albuquerque at Old Town - A Heritage Hotel & Resort -- 800 Rio Grande Blvd. N.W. (505) 843-6300

Monica's El Portal Restaurant (Old Town) -- 321 Rio Grande Blvd. N.W. (505) 247-9625

Pizza

Old Town Pizza Parlor -- 108 Rio Grande Blvd. N.W. (505) 999-1949

Deli

City Treats Museum Cafe (Old Town) -- 2000 Mountain Rd. N.W. (505) 242-5316

Spanish

Cristobals - Hotel Albuquerque at Old Town - A Heritage Hotel & Resort -- 800 Rio Grande Blvd. N.W. (505) 843-6300

Steak/Seafood

Antiquity Restaurant (Old Town) -- 112 Romero St. N.W. (505) 247-3545

High Noon Restaurant and Saloon (Old Town) -- 425 San Felipe St. N.W. (505) 765-1455

2010 HPS Midyear Meeting Exhibitors

Exhibits are located in the Southwest Exhibit Hall

Exhibit Hours
SW Exhibit Hall, Convention Center

Monday	5:30-6:30 PM	Opening Reception
Tuesday	9:30 AM-5:00 PM	Exhibits Open
	9:45-10:30 AM	Refreshment Breaks
	Noon	Lunch-Exhibit Hall
	3:15-3:45 PM	Refreshment Breaks
Wednesday	9:30 AM-Noon	Exhibits Open
	10:00-10:30 AM	Refreshment Breaks

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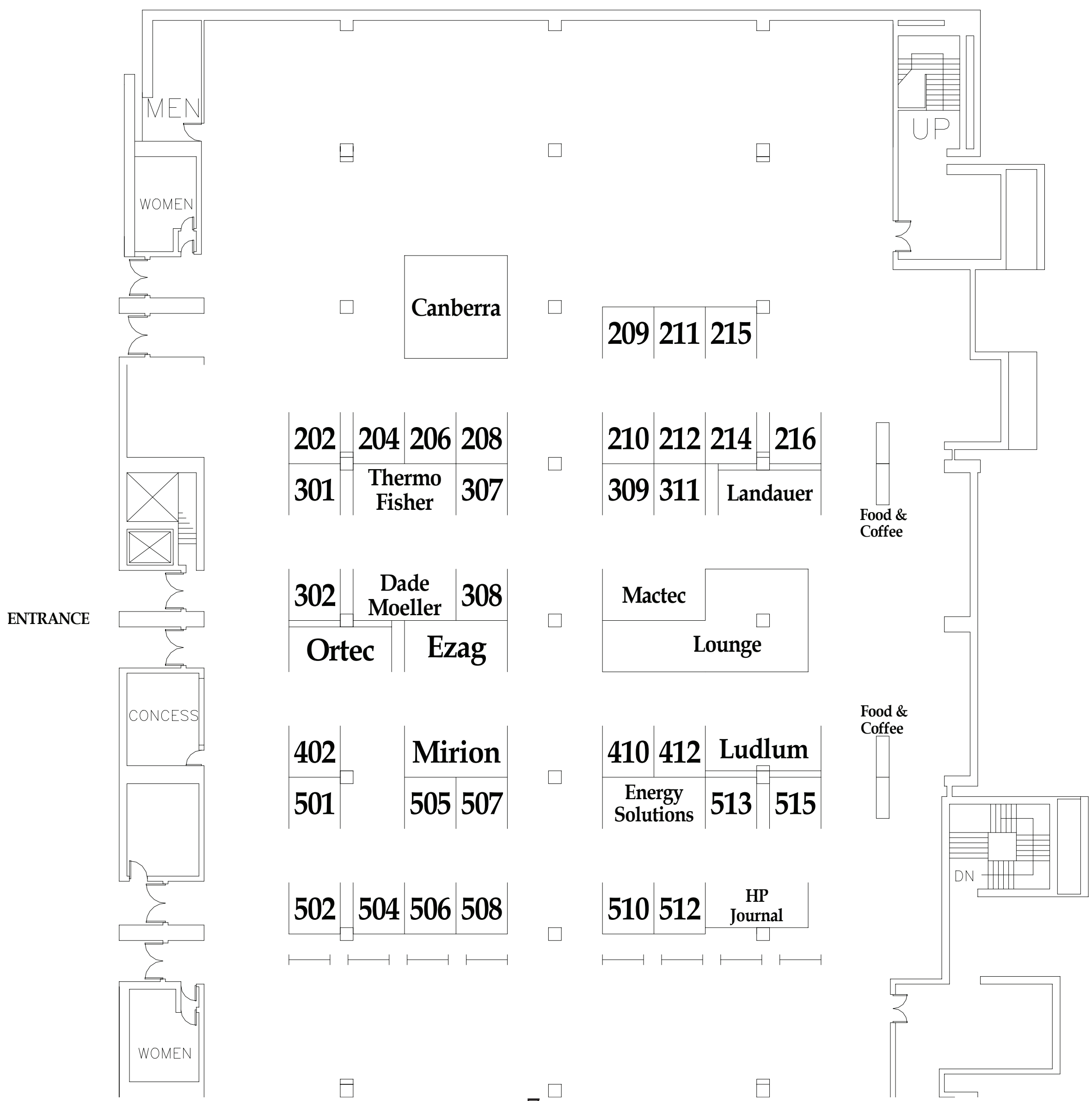
Exhibit Hall Floor Plan



2010 HPS Midyear Meeting Exhibitors

Exhibits are located in SW Exhibit Hall, Convention Center

2010 Annual Meeting **Booth: 209**
Salt Lake City

2011 Midyear Meeting **Booth:211**
Charleston, SC

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The recent acquisition of Nuclitec GmbH, Braunschweig, Germany, formerly QSA Global GmbH added the Isotrak brand product range. Isotrak products include high quality anodized wide area reference sources and a range of instruments like the DoseGuard/RAD60 and the Teletector 6112B/M. All Isotrak products are now available from Eckert & Ziegler Analytics, Atlanta.

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HPS Journal **Booth: 514**

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Technical Program

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

All Sessions will take place in the Albuquerque Convention Center, Ballroom A

MONDAY

7:00-8:00 am **Ballroom A**

CEL 1 The Future of Nuclear Power is Here
J. Paul Farrell, Jodi Strzelczyk
Brookhaven Technology Group, University of Colorado Hospital

8:15 am-NOON **Ballroom A**

MAM-A Plenary Session: Radiation Risk Communication to the Public

Co-Chairs: Richard Toohey, Gus Potter

8:15 am **Introduction**

8:30 am **MAM-A.1**
Terrorism and Radiation Risk Communication
Becker SM
University of Alabama at Birmingham; sbecker@ms.soph.uab.edu

9:15 am **MAM-A.2**
Technically Speaking
Hamrick B
Dade Moeller & Associates, Inc.; barbara.hamrick@moellerinc.com

10:00 am **COFFEE BREAK**

10:30 am **MAM-A.3**
Public Meeting Experience – Being Prepared and Dealing with the Unexpected
Collins S
US Nuclear Regulatory Commission; sam.collins@nrc.gov

11:15 am **MAM-A.4**
Getting Past Us Versus Them
Cravens G
Knopf; GwynethCra@gmail.com

NOON **LUNCH ON YOUR OWN**

1:15-3:15 pm **Ballroom A**

MPM-A Communicating Highly Technical Information to Non-Technical People, Part 1

Co-Chairs: John Till, Scott Kirk

1:15 pm **MPM-A.1**
Approaches by Department of Energy Facilities to Radiological Risk Communication
Dixon GL, Welch K, Vylet V
Jefferson Lab; gldixon@jlab.org

1:30 pm **MPM-A.2**
Training First Responders at the National Institutes of Health
McLellan K
National Institutes of Health; mclellak@mail.nih.gov

1:45 pm **MPM-A.3**
Availability and Limitations of Technical Data During Radiological Emergencies
Bowman DR
US Department of Energy; David.Bowman@nnsa.doe.gov

2:00 pm **MPM-A.4**
Communication Techniques for HPs
Cehn J
Applied Sciences Co.; joel@appliedsciencesco.com

2:15 pm **MPM-A.5**
The Universal Hazard Index - A Non-Technical Risk Communication Tool
Quinn DM, Dauer LT, Williamson M
DAQ Inc., Memorial Sloan Kettering Cancer Center

2:30 pm **MPM-A.6**
How to Communicate Radiation Safety and Risk to Custodians and Firemen
Corti D
University of Montana; dan.corti@mso.umt.edu

2:45 pm **MPM-A.7**
Radiation Safety Presentations for Preschoolers to Adults
McLellan KE
National Institutes of Health; mclellak@mail.nih.gov

3:00 pm **MPM-A.8**

Enquiring Minds Want to Know: HPS Initiatives in Public Information

Classic K, Barlow A, Burress P, Cezeaux J, Davidson T, Hartman M, Harvey R, Ottley D, Shimko R, Williams V
Mayo Clinic, Rochester Tufts University, Florida State University, Battelle, SBC Global, University of California, Davis, Roswell Park Cancer Institute, DOE Hanford, PA Veterans Administration, Merck Inc; classic.kelly@mayo.edu

3:15 pm **COFFEE BREAK**

3:45-5:30 pm **Ballroom A**

MPM-B Public Communication, Part 1

Co-Chairs: Laura Pring and Chris Martel

"How To" Risk Communications, Principles, Tools, and Techniques

Milligan P, Covello V
US Nuclear Regulatory Commission, Center for Risk Communications; patricia.milligan@nrc.gov

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

Exhibitor Reception

TUESDAY

7:00-8:00 am — Ballroom A

CEL 2 Educating Medical Professionals about the Risks Associated with Radiation
Deirdre Elder, Jodi Strzelczyk
University of Colorado Hospital

8:15-10:30 am — Ballroom A

TAM-A Communicating Highly Technical Information to Non-Technical People, Part 2

Co-Chairs: Kelly Classic, Wayne Gaul

8:15 am — TAM-A.1
Radon Risk Communication - 2009 HPS Draft Position Statement on Indoor Radon
Johnson J
Tetra Tech; janetj@sopris.net

8:30 am — TAM-A.2
Comunicating Radiation Risk to Clinical Research Patients at the NIH
Ribudo C, Kindrick S
National Institutes of Health (NIH); ribaudoc@ors.od.nih.gov

8:45 am — TAM-A.3
Identification and Communication of the Potential Health Significance of Off-Site Releases from Key Operations Identified in CDC's Los Alamos Historical Document Retrieval and Assessment Project
Widner T, Le MH
ChemRisk, LLC; twidner@chemrisk.com

9:00 am — TAM-A.4
Public Involvement Components of CDC's Los Alamos Historical Document Retrieval and Assessment Project
Widner T, Le MH
ChemRisk, LLC; twidner@chemrisk.com

9:15 am — TAM-A.5
Nuclear is Hot!! An Effective Tool for Communicating Nuclear Science to High School Students
Fisher D
Pacific Northwest National Laboratory; dr.fisher@pnl.gov

9:30 am — TAM-A.6
Hospital Response During the Red Dragon Drill
Martz M
mmartz@mcw.edu

9:45 am — BREAK

10:30 am-Noon — Ballroom A

TAM-B Public Communication, Part 2

Co-Chairs: Tim Kirkham, Mark Miller

10:30 am — TAM-B.1
US EPA Superfund Program's Policy for Community Involvement at Radioactively Contaminated Sites
Walker S, Martin K
US Environmental Protection Agency; walker.stuart@epa.gov

11:15 am — TAM-B.2
Public Communication Lessons Learned on Sandia's Environmental Restoration Project
Miller ML, Peace GL, Nagy MD, Goering TR
Sandia National Labs, Los Alamos National Labs; mmiller@sandia.gov

11:40 am — TAM-B.3
Challenges in Conveying the Health Relevance of Uranium Exposure to Potentially Affected Communities
Sandoval D, Toth B, Krapfl H
New Mexico Department of Health; deyonne.sandoval@state.nm.us

Noon-1:15 pm — SW Exhibit Hall

Complimentary Lunch in Exhibit Hall

1:15-3:15 pm — Ballroom A

TPM-A Communication Techniques, Part 1

Co-Chairs: Bill Rhodes, Tara Medich

1:15 pm — TPM-A.1
Stanford's Health Physics Program Custom Software Moves to the Web
Banghart D
Stanford University; dawnb@stanford.edu

1:30 pm — TPM-A.2
Creating Virtual Environments for Training Non-Technical Responders for Radiation Emergencies
Ansari A, Caspary K, Burns D, Bolcar S, Scheller A
Centers for Disease Control and Prevention, Oak Ridge Institute for Science and Education, University of Minnesota Center for Public Health Preparedness; AAnsari@cdc.gov

1:45 pm — TPM-A.3
West Coast Maritime Pilot – San Diego Public Outreach Campaign
Inman JC
Department of Homeland Security; james.inman@dhs.gov

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

Talk to the Patient

Fellman A

Dade Moeller & Associates; alan.fellman@moellerinc.com

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

The Physicist-Endochrinoligist - Radiologist Team Approach for Preparation for Radioiodine Procedures

Mozzor M, High MD

New York Medical College/Westchester Medical Center; matty_mozzor@nymc.edu

2:30 pm **TPM-A.6**

Communicating Radiation Risk in Clinical Trials

Balter S, Balter R, Brenner DJ, Weisz G

Columbia University, John Jay College of Criminal Justice; sb2455@columbia.edu

2:45 pm **TPM-A.7**

Risky Business: Challenges and Success in Communicating Military Radiation Risks

Melanson M, Geckle LS, Davidson BA

Army Surgeon General, U.S. Army Center for Health Promotion and Preventive Medicine; mark.melanson@us.army.mil

3:00 pm **TPM-A.8**

The Hardest Concepts I've Ever Tried to Communicate to a Health Physicist

Strom DJ

Battelle – Pacific National Northwest Laboratory; strom@pnl.gov

3:15 pm **COFFEE BREAK**

3:45-5:15 pm **Ballroom A**

TPM-B Communication Techniques, Part 2

Co-Chairs: Tom Widner, Robin Hill

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

As Low As Reasonably Achievable-Based Initiatives Can Be "Risky Business"

Nichelson SM, Klauenberg BJ, Montgomery NM

US Air Force, Texas, US Air Force; Scott.Nichelson@brooks.af.mil

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

An Effective Communication Tool for the Public: The International Nuclear and Radiological Event Scale

Jones CG

US Nuclear Regulatory Commission; cynthia.jones@nrc.gov

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

Making ALARA Reviews Pay Off

Baker SI

Argonne National Laboratory; sambaker@anl.gov

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

Correction to the Effective Dose Published in ICRP 80

Moussa H, Melanson M

Battelle Memorial Institute, Walter Reed Army Medical Center; hmoussa@utk.edu

5:00 pm **TPM-B.6**

The Community Environmental Monitoring Program: Conveying Radiation Risk to the Public Through Direct Participation

Hartwell WT, Shafer DS, Curtis S

Desert Research Institute; ted.hartwell@dri.edu

WEDNESDAY

7:00-8:00 am **Ballroom A**

CEL 3 ABHP Exam Fundamentals – Tips for Successfully Completing the Certification Process
Cheryl Olson
Dominion KPS

8:15-10:00 am **Ballroom A**

WAM-A Crisis and Public Risk Communication, Part 1

Co-Chairs: Cynthia Jones and John Lanza

8:15 am **WAM-A.1**
Radiation versus Radioactivity: A Communication Challenge
Strom DJ
Pacific Northwest National Laboratory; strom@pnl.gov

8:35 am **WAM-A.2**
Communicating Complex Information in a Crisis
Harrington H
US Nuclear Regulatory Commission; holly.harrington@nrc.gov

9:00 am **WAM-A.3**
Lessons Learned from a Research Laboratory Pu Spill
Mengers T
National Institutes of Standards and Technology (NIST); timothy.mengers@NIST.GOV

9:15 am **WAM-A.4**
Communicating Health Information to Decision Makers and Non-Governmental Organizations: Experience of Chornobyl
Bebeshko V, Romanenko A, Bazyka D*
Research Center for Radiation Medicine, Kyiv, Ukraine; bazyka@yahoo.com

9:30 am **WAM-A.5**
Communication with Claimants and Survivors
Toohey RE
ORAU; dick.toohey@orau.org

9:45 am **WAM-A.6**
Communication with Fearful Population Groups in Long-term Epidemiological Cancer/Leukemia Studies in Ukraine
Bazyka D, Romanenko A, Gudzenko N
Research Center for Radiation Medicine, Kyiv, Ukraine; bazyka@yahoo.com

10:00 am **COFFEE BREAK**

10:30 am-12:30 pm **Ballroom A**

WAM-B Crisis and Public Risk Communication, Part 2

Co-Chairs: Patricial Milligan and Cathy Ribudo

10:30 am **WAM-B.1**
Using Health Physicist Volunteers with Local Medical Reserve Corps (MRC) as Emergency Communicators
Lanza JJ
Florida Department of Health; john_lanza@doh.state.fl.us

10:45 am **WAM-B.2**
What Have We Learned about Public Communications for Radiation Emergencies from Audience Research?
Ansari A, McCurley MC, Pollard K, Miller CW, Whitcomb, Jr. RC
Centers for Disease Control and Prevention; AAnsari@cdc.gov

11:00 am **WAM-B.3**
Communication of Radiation Risks and Benefits in Decision Making
Locke PA, McBaugh D, Tenforde TS
The Johns Hopkins University, Bloomberg School of Public Health, Washington State Department of Public Health, Office of Radiation Protection, National Council on Radiation Protection and Measurements; plocke@jhsph.edu

11:15 am **WAM-B.4**
Openess, Transparency, Communication; The NRC and its Stakeholders
Milligan P
US Nuclear Regulatory Commission; patricia.milligan@nrc.gov

11:30 am **WAM-B.5**
To Become Better Communicators We Need to Deal with Radiation Mythology
Johnson RH
Dade Moeller and Associates; ray.johnson@moellerinc.com

11:45 am **WAM-B.6**
Putting Radioactivity in Perspective with Radon Risk Communication
Smith TY
Spruce Environmental Technologies, Inc.; tsmith@spruce.com

12:00 pm WAM-B.7

Homeland Security Blankets - Care Packages for the Worried Well—Revisited

Stansbury P, Strom DJ

Pacific Northwest National Laboratory; paul.stansbury@pnl.gov

12:15 pm WAM-B.8

Radiation Risks in Everyday Life

Rutherford PD

The Boeing Company, Santa Susana Field Laboratory; philip.d.rutherford@boeing.com

Continuing Education Lectures

CELs take place in the Albuquerque Convention Center, Ballroom A

Monday, January 25 7:00-8:00 am

CEL 1 The Future of Nuclear Power is Here

J. Paul Farrell & Jodi Strzelczyk

Brookhaven Technology Group, University of Colorado Hospital

For over 20 years the psychological effects of misinformation following the Chernobyl accident persisted and shaped public opinion about nuclear power around the world, in the U.S in particular. Some of the consequences of the perceived risks are: a shortage of supply of radioisotopes needed in medical and industrial applications and the inevitable energy crisis in the US and other countries. While this crisis on a local scale was evident during recent natural disasters, growing population and energy demand is likely to lead to a crisis on a global scale unless we put to use all available technologies. Recent studies focused on LWRs with 10 to hundreds MW(e) outputs. However, even reactors smaller than 1000 MW(e) require large structures in place, and operate for 30 years or more. There are site decontamination and radwaste issues associated with these systems. This session will present designs of very compact, transportable, shielded multi-megawatt nuclear power systems, 10 and 50 MW(e) that, if needed, can be readily be scaled up to 100 MW(e) with an accompanied thermal water and steam output of 300 MW(th) per reactor. These designs offer safe and quick access to power and heat in numerous situations ranging from back-up capabilities to disaster response needs and should be given immediate consideration by the scientific community and public.

Tuesday, January 26 7:00-8:00 am

CEL 2 Educating Medical Professionals about the Risks Associated with Radiation

Deirdre Elder, Jodi Strzelczyk

University of Colorado Hospital

The number of medical procedures involving radiation and radioactive materials has increased dramatically since the 1980s. Much of the growth has occurred in computed tomography (CT), nuclear medicine and interventional procedures, which deliver higher patient doses than conventional radiography. Medical professionals often misunderstand the risks to patients and staff from the medical use of radiation and radioactive materials. The risks associated with a single diagnostic procedure are very small; however, some patients undergo repeated diagnostic and interventional procedures resulting in cumulative doses that may significantly increase the risk of cancer. In addition, complicated fluoroscopically guided procedures may result in deterministic effects including radiation burns and skin necrosis. The use of radiation in medicine should be governed by the concepts of justification and optimization. Unfortunately, recent studies have indicated that a large percentage of diagnostic radiology may not be medically justifiable, and CT scans are ordered in cases where other imaging modalities would have provided the same diagnostic information at a lower risk to the patient. It is important for physicians, nurses and technologists to be properly educated about the risks associated with the medical use of radiation. Medical professionals who do not understand the risks of radiological and nuclear medicine examinations are unable to provide patients with the information necessary to make informed decisions about their care. They are also poorly equipped to protect themselves, staff members and the public from unnecessary radiation exposure.

Wednesday, January 27 7:00-8:00 am

CEL 3 ABHP Exam Fundamentals – Tips for Successfully Completing the Certification Process

Cheryl Olson

This presentation will the advantages of being certified discuss the fundamentals of the ABHP exam process – from submission of the exam application to completion of the Part 2 examination. Topics of discussion will include:

- What are qualifying academic requirements?
- Why require a degree?
- What is meant by “professional level” experience?
- How are the exams (Part 1 and Part 2) prepared?
- How is the passing point determined?
- What are the keys to good performance on the exam?
- What pitfalls exist that detract from good exam performance?

This presentation will help persons interested in certification to prepare an application that will accurately reflect the applicant’s education and experience as well as providing tips for preparing to take the exam and answering part 2 questions in a format that promotes awarding partial credit. Persons who are already certified may gain insight into the process and identify areas where they would be willing to assist in certification process. The material presented consolidates pertinent exam policy/procedure into an easily digestible format, offering real world examples of good and poor performance.

MAM-A.1 Terrorism and Radiation Risk Communication

Becker SM

University of Alabama at Birmingham; sbecker@ms.soph.uab.edu

Effective risk communication is now seen as one of the most crucial components of radiological/nuclear terrorism preparedness and response. As a result, a wide range of efforts have been undertaken by government agencies, academic research institutes, private sector organizations, and others to begin to improve public information and emergency messaging for radiation events. This presentation highlights some of the most significant developments in radiation risk communication, and traces out their practical implications. This is followed by a discussion of future research needs and additional practical steps required to better address people's concerns, help protect public health, and maintain public trust and confidence.

MAM-A.2 Technically Speaking

Hamrick B

Dade Moeller & Associates, Inc.; barbara.hamrick@moellerinc.com

Much of the Health Physics Society's recent outreach efforts have focused on the "fear factor." Health physicists encounter this reaction to radiation on a frequent basis. Whether the public relies on Hollywood, the media, or their elected officials, the message that radiation is one of the scariest things on earth comes through loud and clear. However, even if we could get beyond that primal reaction, we health physicists still have a problem. That problem lies in the ever present uncertainty associated with radiation, measurements, calibrations, dose assessments, and all the other myriad of activities associated with the practice of health physics. While we do need to continue addressing the emotional baggage with which radiation is laden, we also need to begin thinking more about how to communicate technical concepts in a more accessible way. This presentation delves into some of the fundamental technical issues that inhibit our ability to communicate clearly and effectively with a non-technical audience, and explores alternatives for improving this communication.

MAM-A.3 NRC Stakeholder Interactions - Delivering & Getting the Message

Collins S

US Nuclear Regulatory Commission; sam.collins@nrc.gov

This fast paced, oral Plenary Session presentation will focus on storytelling and lessons-learned from high profile, critical conversations conducted at Nuclear Regulatory Public Meetings. Learnings from unanticipated challenges such as impromptu demonstrations, civil disobedience and unique meeting forums will be shared. Plain-language, body-language, empathy, sincerity and technical credibility will be emphasized. Tune-up your right brain for this discussion…..

MAM-A.4 Getting Past Us Versus Them

Cravens G

Knopf; GwynethCra@gmail.com

I tell the story of how, while researching a book about nuclear power, I went from being fearful about all radiation to a calming shift in perspective thanks to patient explanations from HPS members Leo Gomez and Raymond Guilmette. The public has a tendency to adopt outlandish suppositions, often originating in sensationalism based on worst-case analyses. But members of the scientific community harbor biases as well, and we all react similarly when faced with unknown risks. Scientists resorting to technical language and acronyms to answer queries from concerned laypeople may sow misunderstandings that ultimately lead to legislation unsupported by science. Communication can be improved using community outreach and listening respectfully to worries. Everyday examples, analogies, anecdotes, and imagery to help people distinguish low-dose exposure from high-dose are discussed. Employing attention and patience, health physics professionals can better help the public to move from myth to fact.

MPM-A.1 Approaches by Department of Energy Facilities to Radiological Risk Communication

Dixon GL, Welch K, Vylet V

Jefferson Lab; gldixon@jlab.org

Department of Energy (DOE) facilities are required to prepare an Annual Site Environmental Report (ASER), which includes data on radiation exposures to the public that are associated with site operations. The ASER is the primary means for informing stakeholders and the general public on all environmental issues. DOE has provided guidance on the presentation of radiological exposure data, but leaves the issues associated with radiological risk communication to each facility. This paper summarizes the DOE guidance on ASER content, then examines the risk communication approaches taken by facilities in California, New York, Illinois, Virginia, Georgia, New Mexico, and Tennessee. We qualitatively compare the completeness and comprehensibility of the risk communications; completeness is assessed via a checklist of the contents of the "ideal" ASER, while comprehensibility is rank-ordered by a panel of Virginia residents with varying backgrounds and education. This panel also assigns a "perceived risk" value to the presented radiological exposures at each site. The Public Information Officer at each DOE facility is also asked for a perceived radiological risk indication, based upon experience. Finally, the calculated risk to the Maximally Exposed Individual is presented for comparison. In conclusion, the paper recommends that DOE continue to employ a "graded" approach that allows for necessary flexibility, but that DOE facilities be given additional risk communication tools from which to draw.

MPM-A.2 Training First Responders at the National Institutes of Health

McLellan K
National Institutes of Health; mclellak@mail.nih.gov

The National Institutes of Health (NIH) is one of the largest biomedical research facilities in the world using radioactive materials in implementing the mission of biomedical research. The NIH has a 250 bed research hospital which includes a nuclear medicine department, a radiation oncology department, research laboratories, vivarium facilities, several residential complexes and a METRO train stop. The NIH firefighters and police are the first responders to incidents involving radioactive materials after hours on the NIH campus and may be called to assist with response during business hours. The firefighters and police officers are trained by the Division of Radiation Safety. The training prepares the responders to mitigate the contamination incidents until health physicists from the Division of Radiation Safety respond to campus. This presentation outlines the training procedures and risk communications presented to both the NIH firefighters and police officers.

MPM-A.3 Availability and Limitations of Technical Data During Radiological Emergencies

Bowman DR
US Department of Energy; David.Bowman@nnsa.doe.gov

During radiological emergencies, it is important for emergency managers, governmental decision makers, and public affairs officials to understand when technical information will become available and how reliable this information is likely to be. Understanding the limitations in the technical data is critical for them to be able to issue suitable Protective Action Decisions and to communicate effectively with the public. In this paper, I will describe the technical information that will be provided by subject matter experts, the time frames on which this data will be provided, and how the reliability of the information improves over the course of the response. The support provided by the Department of Energy Radiological Response Teams - the 9 Regional Radiological Assistance Teams (RAP), the National Atmospheric Release Advisory Center (NARAC), the Aerial Measuring System (AMS), the Radiological Emergency Assistance Center / Training Site (REAC/TS), the Consequence Management Home Team (CMHT), and the Consequence Management Response Team (CMRT) that comprises the DOE element of the Interagency Federal Radiological Monitoring and Assessment Center (FRMAC) - will be used to illustrate the time evolution of a radiological incident.

MPM-A.4 Communication Techniques for HPs

Cehn J
Applied Sciences Co.; joel@appliedsciencesco.com

There are effective techniques for communicating with a lay audience. However, a model is difficult to construct. The approach we often use of "educating the public" is rarely effective, especially in a high pressure environment like a public meeting. Rather, the following techniques have been learned over many years and have been found to work. Start with a concise statement. This is the opposite of how we write a technical paper—building to a conclusion. Rather, start with your conclusion, and then fill in the background. Look at any newspaper article and see how a reporter does this. All reporters do it, and it's a lesson we can learn. Know your audience. A presentation to a high school class will vary greatly from one given to a Rotary Club. Speak to someone from the group ahead of time. Find out their concerns and pre-conceptions (and misconceptions). Then tailor your remarks accordingly. Be positive. Saying something is safe is not the same as saying it isn't dangerous. Research has shown that listeners react negatively to a word like "dangerous" even though you're saying it's not. Conversely, people react to the word, "safe" positively. Diffuse any emotional bombs. Activists looking for headlines know how to craft and throw these. (e.g., "Our workers are dying!") Get emotional right back and diffuse the bomb. ("I'm one of those workers and I'm more concerned than anyone…") Once you've done that, you can support your position with cold facts. Be aware of non-verbal communication. This is how you position your body, your facial expressions, who you look at or don't look at. Standing with arms crossed while you're listening says you're not really listening. Try watching a heated debate on TV with the sound off. It's remarkable what is communicated non-verbally. Finally, good communication takes practice. Like any skill, it has to be honed. Anticipate the questions you'll be asked and develop good, concise answers. Mark Twain once said, "The best ad-lib speech I ever gave took me two weeks to prepare."

MPM-A.5 The Universal Hazard Index - A Non-Technical Risk Communication Tool

Quinn DM, Dauer LT, Williamson M
DAQ Inc., Memorial Sloan Kettering Cancer Center

Risks from radiation and from other hazards are not well understood by the general public. There is a need for a simple scale of risks that can be easily understood and is useful across a wide range of hazards and outcomes. This presentation suggests the use of a "Universal Hazard Index" as a useful communication tool. A Universal Hazard Index (UHI) could include the following types of parameters that could be multiplied in order to derive the index value: level of injury (range 1-100), immediacy of injury (range 1-3), number of people affected (the actual number of people affected), and probability of injury (a fraction of 1.0). The multiplied values are then simplified into an index value using a base 10 logarithmic scale (i.e., a product of 100 is UHI=2, and a product of 100,000 is UHI=5). Using this Universal Hazard Index, risks can be compared across various types of hazards, and the results can be explained in a ways that the public is accustomed to, such as the Richter Scale or the Saffir-Simpson Hurricane Scale (hurricane levels 1 – 5). A few specific comparisons will be presented, including example radiological risks such as CT scans, radon exposure, and releases from nuclear power plants. For comparison, a few non-radiological risks, such as automobile accidents, snake bites, and risks from certain diseases will be presented. In addition, the presentation will include a discussion of how benefits could also be incorporated into a Universal Hazard Index.

MPM-A.6 How to Communicate Radiation Safety and Risk to Custodians and Firemen

Corti D
University of Montana; dan.corti@mso.umt.edu

Radiation safety and associated relative risk are a virtual unknown to anyone not working directly with ionizing radiation. This presentation addresses two distinctly different groups who need technical information presented in a easy to digest format; custodians who may work in a facility doing routine maintenance and firemen who may have to respond to an emergency where radioisotopes are present. Both groups need a basic understanding of the nature of radioactivity, what risk they may or may not face in the presence of radioisotopes and an ability to communicate this information to co-workers in a comprehensible manner. This requires the information to be broken down into short, easy to remember pieces that lack much of the detail that health physicists love so much. This presentation focuses on lessons learned in a university setting with low levels of radioactivity over many years and emphasizes what has worked well and to a lessor extent what has not worked well."

MPM-A.7 Radiation Safety Presentations for Preschoolers to Adults

McLellan KE
National Institutes of Health; mclellak@mail.nih.gov

Radiation is all around us. You cannot feel it, touch it, taste it nor see it. People are inundated with information from the news media, science shows and other sources as to how bad radiation is for us. How do we dispel the fears that the word radiation implies? The presentation will offer practical techniques employed in presentations given to preschoolers, middle school students, high school students and adults of all ages. Techniques employed include lectures, participation exercises, show and tell and drill exercises.

MPM-A.8 Enquiring Minds Want to Know: HPS Initiatives in Public Information

Classic K, Barlow A, Burress P, Cezeaux J, Davidson T, Hartman M, Harvey, R, Ottley D, Shimko R, Williams V Mayo Clinic, Rochester Tufts University, Florida State University, Battelle, SBC Global, University of California, Davis, Roswell Park Cancer Institute, DOE Hanford, PA Veterans Administration, Merck Inc; classic.kelly@mayo.edu

The Public Information Committee (PIC; formerly the Public Education Committee) is responsible for informing the public on radiation safety issues; communicating with news media personnel on radiation safety issues; gathering, organizing, and presenting applicable information; responding to requests of the President and others for presentation of this information to lay persons and to other scientific and technical organizations; facilitating dissemination of accurate and unbiased information on ionizing radiation through the use of prepared educational materials; and other activities as suggested and/or approved by the Board of Directors. The Public Information Committee is accountable to the HPS Board for duties that relate to Strategic Plan Objective No. 5 "To foster the use of sound science in public policy and the recognition of the HPS," specifically goals 5.1, 5.3, and 5.5 - 5.7. To achieve this responsibility, PIC generates white papers, information sheets and fact sheets for dissemination to all interested parties including members of congress, media, the public, and HPS members. Any member of HPS may identify a topic to PIC that may be sought-after by the groups served by PIC. Documents are prepared by PIC members with assistance by subject matter experts. Following PIC review and approval, documents are edited by Web Operations editorial staff and approved as necessary by other HPS Committees. After formal approval, papers become official Society documents and are copyrighted. This presentation will highlight committee accomplishments and future plans as they relate to communicating radiation risk to the public.

MPM-B.1 "How To" Risk Communications, Principles, Tools, and Techniques

Milligan P, Covello V

US Nuclear Regulatory Commission, Center for Risk Communications; patricia.milligan@nrc.gov

The accident at the Three Mile Island Unit 2 nuclear power plant in March 1979 highlighted the need for effective communication with the public, media, and local and State emergency response officials. The accident led to an overhaul of emergency planning regulations and guidance. Based on existing regulations and guidance, each licensee and local response organization is responsible for developing their own media and communication plans for a radiological event. The lack of clear guidance has resulted in a wide range of facilities and equipment available to support public communications during an emergency as well as lack of consistency throughout the industry and offsite officials in reporting events. To illustrate; a power plant suffered a steam generator tube failure in 2000. The licensee was quick to state that there was no release of radioactive materials while the NRC stated there was a minor release of radioactive materials. The ongoing confusion resulted in significant lack of trust among members of the public. The licensee in this case suffered from a number of problems at their joint information facility and this hampered effective communications with the public and damaged trust in the licensee which exists to this day.

There has been great emphasis on "risk" communications and "good" communications in professional journals, at meetings, workshops, and conventions. While these efforts at awareness are long overdue, in so many cases they lack the necessary tools to make them effective. The NUREG/CR upon which this paper is based provides tools and techniques for NRC licensees and others to use to develop effective "risk" communications.

This workshop will provide a "hands on" opportunity for participants to learn how to use the tools (i.e. message mapping, templates) to develop and use prescripted messages as part of their risk communications strategy.

TAM-A.1 Radon Risk Communication - 2009 HPS Draft Position Statement on Indoor Radon

Johnson J; Tetra Tech; janetj@sopris.net

The Health Physics Society communicates with the public on radiation protection issues through its Position Statements. In 2007, the HPS President and Board of Directors established an Ad Hoc Committee to review the 1990 Position Statement on Indoor Radon and to revise it in accordance with the current state of scientific knowledge regarding radon risk. The Committee, consisting of individuals with expertise in radon epidemiology, measurement, policy, and risk communication, concluded that epidemiologic data and dosimetric analyses support a recommendation for remediation at the EPA guideline indoor radon concentration of 4 pCi/L (150 Bq/m3) and that there is credible scientific evidence for an increase in lung cancer risk at indoor radon concentrations below the guideline level. The Ad Hoc Committee produced a Draft Background Document describing the scientific basis for the Position Statement. The Draft Position Statement and Draft Background Document were approved by the Scientific and Public Issues Committee in 2009. (As of the date of this abstract, the documents had been submitted to the Board of Directors for final approval.)

TAM-A.2 Communicating Radiation Risk to Clinical Research Patients at the NIH

Ribudo C, Kindrick S

National Institutes of Health (NIH); ribaudoc@ors.od.nih.gov

Clinical research is a branch of medical science that determines the safety and effectiveness of medications, devices and diagnostic procedures intended for human use. The informed consent document is the main method of conveying risk of radiation in a research study to clinical research patients. While it is important to make the patient understand the risk of radiation, it must be done so with minimal verbiage. Most often the main risk of radiation is the remote risk of cancer in the future from diagnostic studies. Since effective dose can be used to estimate cancer risk, it is the term best used in the consent document to inform the patient of radiation dose. Occasionally, acute symptoms such as reduced blood count or alopecia can be caused by high dose radiation. Children and mentally impaired patients need special language to convey risk which is given in an “assent” document. The appropriateness of radiation risk language is reviewed both by Institutional Review Boards and Radiation Safety Committees. Some example informed consent language is shared for certain clinical research studies at the National Institutes of Health.

TAM-A.3 Identification and Communication of the Potential Health Significance of Off-Site Releases from Key Operations Identified in CDC’s Los Alamos Historical Document Retrieval and Assessment Project

Widner T, Le MH

ChemRisk, LLC; twidner@chemrisk.com

From 1999 through 2008, a team of scientists and engineers working for the Centers for Disease Control and Prevention (CDC) gathered information at Los Alamos National Laboratory (LANL) that was relevant to off-site releases of radionuclides and chemicals. Millions of classified and unclassified documents were reviewed. Prioritization was difficult because many releases were not monitored, documented, or otherwise quantified for significant periods. Radionuclides were prioritized based on annual dilution volumes required and chemicals based on usage data and published toxicity criteria. Releases before 1970 were most significant, and plutonium yielded the highest Priority Indices among radionuclides. Organic solvents, TNT, and uranium ranked highest among chemicals. Releases judged to be of particular importance include airborne plutonium, beryllium, tritium, uranium, and radioactivity from the Trinity test. Historical releases are of particular interest because residential areas were built closer to LANL production areas than at any other U.S. nuclear site. A screening-level evaluation of plutonium facility stack releases using the methodology of NCRP Report No. 123 yielded results that exceeded limiting values that are based on 1 in 100,000 added cancer risk. A screening assessment of five historical beryllium operations indicated that air concentrations in residential areas could have exceeded worker exposure limits, the USEPA reference concentration, and the National Emission Standard limit on 30-d average ambient concentrations. Summaries presented in a draft final report and at a June 2009 public meeting contained information for use by CDC and other stakeholders in determining if further investigation is warranted for any historical releases from Los Alamos operations.

TAM-A.4 Public Involvement Components of CDC’s Los Alamos Historical Document Retrieval and Assessment Project

Widner T, Le MH

ChemRisk, LLC; twidner@chemrisk.com

From 1999 through 2008, the Centers for Disease Control and Prevention (CDC) led an effort to gather information at the Los Alamos National Laboratory (LANL) that was relevant to historical off-site releases of radionuclides and chemicals. The goals of the project were to collect relevant documents, make assembled information publically available in a project information database, list the materials that were historically released, prioritize those releases, and determine whether any past operations warrant a more detailed evaluation. Relevant documents were processed for public release, scanned, and made available to the project team, members of the public, and other researchers via an Internet-based database application called DocSleuth. Additionally. interviews were conducted of over 100 active and retired workers and local residents. A set of the selected documents is available at the Zimmerman Library at the University of New Mexico in Albuquerque. Sixteen public meetings were held at various locations in the Los Alamos-Espanola-Taos-Pojoaque-Santa Fe region over the ten year history of the project. These meetings included presentations and discussions concerning progress in information gathering, knowledge gained about historical activities of relevance to off-site releases, problems that were being encountered in accessing and obtaining relevant documents, plans for completion of information gathering, and progress toward prioritizing historical releases. The project team also met with representatives of each of the Eight Northern Indian Pueblos. A project Web site provided availability of summaries of all public meeting presentations and associated public comments and discussion, summaries of workshops that were conducted to offer more detailed overviews of project-related topics, downloadable copies of Interim Reports of the project, and instructions on how to contact project team members and access the project document collection and the DocSleuth database.

TAM-A.5 Nuclear is Hot!! An Effective Tool for Communicating Nuclear Science to High School Students

Fisher D
Pacific Northwest National Laboratory; dr.fisher@pnl.gov

In 2009, the EnergySolutions Foundation published Nuclear is Hot! (Everything You Wanted to Know About Nuclear Science but Were Afraid to Ask), by Raul Deju, Harry Babad, and Michael Deju. Raul Deju is the Chief Operating Officer at EnergySolutions (Salt Lake City), and Michael, his son, is a high school student in Moraga, California. Harry Babab is a retired Hanford scientist. Michael wrote and edited a substantial part of the book from the perspective of a typical teenager. This vivid, full-color book provides an entertaining perspective on nuclear energy, radiation, health, and nuclear waste without all the typical jargon, technical analysis, and number-crunching that so often burdens standard teaching materials. What we find instead, up front, are direct answers to common questions—with fun and thought-provoking illustrations and photographs, and balanced factual information. Nuclear is Hot! was designed to supplement the standard materials available to high school teachers while dispelling many of the common myths and misconceptions that young people often receive through magazines, newspapers, movies, and television. Reviews of Nuclear is Hot! have been outstanding. This book should appeal not only to young readers, but also to teachers and parents who want to stay young at heart and up-to-date on nuclear energy and radiation health issues.

TAM-A.6 Hospital Response During the Red Dragon Drill

Martz M
mmartz@mcw.edu

From March, 2009, to June, 2009, a series of drills involving a radiological dispersal device (RDD) were conducted in the metropolitan area of Milwaukee, Wisconsin. Named Red Dragon, the drill constituted the largest multi-agency RDD scenario attempted to date in the United States. Froedtert Hospital and the Children's Hospital of Wisconsin comprise the Level One trauma center that served as the site for triage, decontamination and treatment of over 100 victims who participated in the exercise. Examined are hospital resources, plans, interaction with external agencies, communications and lessons learned.

TAM-B.1 US EPA Superfund Program's Policy for Community Involvement at Radioactively Contaminated Sites

Walker S, Sanchez Y
US Environmental Protection Agency; walker.stuart@epa.gov

This presentation describes the EPA Superfund program's statutory requirements for community involvement. Initially, the CERCLA statute had community involvement requirements designed to inform surrounding communities of the work being done at a site. This presentation also discusses the efforts the Superfund program has made that go beyond these statutory requirements to involve communities, and what lessons have been learned by EPA when trying to conduct meaningful community involvement at sites. We've structured our program around two main themes, building capacity in staff to enable them to be effective in working with communities, and building capacity in communities to enable them to be knowledgeable about the site(s) in their communities, and to provide them with constructive ways to discuss and resolve site issues. In addition, the presentation discusses the two tools that EPA has designed to specifically enhance community involvement at radioactively contaminated Superfund sites. The first is a booklet entitled "Common Radionuclides Found at Superfund

Sites." The information in this booklet is intended to help the general public understand more about the various common radionuclides found at Superfund sites. The second is a video entitled "Superfund Radiation Risk Assessment and How you can Help, an Overview." This 19 minute video describes the Superfund risk assessment process for radioactive contamination: what it is, how it works, and most importantly, how members of the public can be involved.

TAM-B.2 Public Communication Lessons Learned on Sandia's Environmental Restoration Project

Miller ML, Peace GL, Nagy MD, Goering TR
Sandia National Labs, Los Alamos National Labs; mmiller@sandia.gov

Over the 15 years of Sandia's Environmental Restoration Project, 268 designated sites required restoration from legacy contamination remaining from Cold War era testing. This involved various levels of complexity and rigor depending on the size of the site, the testing involved and the residual contaminants of concern. It could entail the excavation of former landfills, remediation of surface contaminants, cleanup of groundwater contaminants or documenting that no restoration was even required. At all of the sites, the public was informed as to the proposed actions, and in many instances, their input was taken into consideration for the final remedial action planned. There were poster sessions, Citizen Advisory Boards, public meetings, public reading rooms and public hearings as needed to ensure that the entire process was as transparent as possible. In spite of the best intentions of this public outreach effort, there were a few instances of intense disagreement as to what constituted appropriate remediation. This is where technical staff learned, to their chagrin, that public communication involves more than presentation of "just the facts, ma'am." Final actions were sometimes based on political as well as technical considerations. In some instances, the facts spoke for themselves and there was little concern. In other instances, the public had concerns that were not assuaged by the facts as presented. Considerable consternation, credibility and trust loss could have been avoided by early recognition of issues that the public were overly sensitive to and development of a strategic communication plan that was proactive rather than reactive.

TAM-B.3 Challenges in Conveying the Health Relevance of Uranium Exposure to Potentially Affected Communities

Sandoval D, Toth B, Krapfl H
New Mexico Department of Health; deyonne.sandoval@state.nm.us

The New Mexico Department of Health has a history of investigating New Mexicans' exposure to uranium through biomonitoring studies. Results of these studies demonstrate high levels of uranium exposure even in areas with minimal uranium exploration and extraction. Given that naturally occurring uranium deposits are common in New Mexico, communities with uranium exploration may have higher exposure and therefore increased potential for adverse health outcomes. The Health Department helps communities understand the potential health risks of living in uranium rich areas due to naturally occurring and man-made sources. Increasing knowledge is a key step to spurring activity to minimize exposure and increase prevention practices. Outlined in the presentation are the challenges and considerations of the health communication process in conveying the health relevance of the biomonitoring studies to communities.

TPM-A.1 Stanford's Health Physics Program Custom Software Moves to the Web

Banghart D
Stanford University; dawnb@stanford.edu

In 1992 Stanford Health Physics developed custom 4D software to capture and manage all radioactive material data such as authorizations, user training, room surveys, sealed source leak tests, inventory, receipts, and more. While this software was powerful and state-of-the-art in the early 90s, over time it has become more challenging to maintain. To take advantage of the tools now available through a web interface, our developers are back to work. How can web-based software improve overall communication and make everyone happy? By including a user self-service modality, the program enables users to provide inventory submittals, or access training records, daily log entries, and allows user survey documentation to be entered. The Health Physics interface will include all of the benefits of the original 4D program plus it will have the additional access and organization of all user data, automatic reports, the ability to uploaded photos, scan documents (such as oversight committee meeting minutes), waste disposal records and the increasingly important historic radioactive material use data to streamline preparations for decommissioning.

With users and health physicists logging in and obtaining live updates while also locking in web security; this software ensures we are all literally on the same page.

TPM-A.2 Creating Virtual Environments for Training Non-Technical Responders for Radiation Emergencies

Ansari A, Caspary K, Burns D, Bolcar S, Scheller A
Centers for Disease Control and Prevention, Oak Ridge Institute for Science and Education, University of Minnesota Center for Public Health Preparedness; AAnsari@cdc.gov

Virtual environments can provide an interactive mechanism for communicating basic information as well as operational concepts to an audience who would otherwise face challenges following the technical information and learning abstract procedures. Teaching the principles of screening a large population for radioactive contamination to public health and emergency management professionals is one example where an interactive training environment can offer distinct advantages. The Virtual Community Reception Center (V-CRC) is constructed in 3D using Second Life (an online virtual community) development tools. V-CRC creates an immersive training environment that allows users to explore the facility, learn multiple processes at their own pace, and access technical information and resources as needed to facilitate their own planning. By layering information throughout the virtual reception center, users of all knowledge bases can benefit from this self-paced training experience. "Dirty Bomb! After the Blast" is another online simulation intended for health care professionals and public health workers (especially state and local health department staff) who are responsible for emergency preparedness as well as the Medical Reserve Corps volunteers who may be called upon to assist in their community's response. This online training simulation incorporates principles of radioactive decontamination, fatality management, mass fatalities, and disaster mental health in a highly interactive environment which engages the users and provides them with instant feedback.

*The project at the University of Minnesota Center for Public Health Preparedness was supported in part through a grant from the Centers for Disease Control and Prevention, Grant/Cooperative Agreement Number U90/CCU524264.

TPM-A.3 West Coast Maritime Pilot – San Diego Public Outreach Campaign

Inman JC
Department of Homeland Security; james.inman@dhs.gov

The Domestic Nuclear Detection Office (DNDO) of the U.S. Department of Homeland Security established the West Coast Maritime Pilot (WCMP) to design, field and evaluate a robust, layered, preventive radiological/nuclear detection (PRND) capability for public safety forces to address the risk of small maritime vessels (>300 gross tons) being used to transport illicit radiological/nuclear (rad/nuc) materials and/or weapons. San Diego, and the surrounding area, was one of two selected pilot sites for the operational testing and evaluation of this PRND capability. Washington State's Puget Sound is the other site. The capability consists of human portable and vessel-mounted rad/nuc detectors; a regional maritime Concepts of Operations (CONOPs) for Federal, State and local agencies; Standard Operating Procedures (SOPs) for the detection, alarm resolution and interdiction of threats; as well as training on equipment, CONOPs, and SOPs. Although approximately 400 emergency responders will receive training and equipment during the Pilot, the number of patrol vessels is greatly out numbered by the number of small private and commercial vessels in the waters surrounding San Diego. As with all law enforcement activity, it is critical that the public be aware of the risks, what is being done to protect them, and ways in which they can assist. The San Diego portion of the WCMP is actively engaged in a public outreach campaign to address these three subjects. The campaign consists of brochures distributed by participating public safety agencies to the local boating community, interviews and press releases with local and national media outlets, and presentations at industry conventions, conferences, and symposiums.

TPM-A.4 Talk to the Patient

Fellman A
Dade Moeller & Associates; alan.fellman@moellerinc.com

Imagine what it must be like to have a child with a condition that calls for treatment involving multiple interventional radiology procedures, procedures that result in upwards of one hour of fluoroscopy time to portions of the scalp and face. Depending on the operating parameters of the fluoroscopy device, the dose to the skin will range from approximately 0.02 - 0.04 Gy per minute. Therefore, under some circumstances, the 2 Gy threshold dose for temporary epilation is surpassed during one procedure. Now imagine the horror that both an underage patient and his or her parents experience when, two to three weeks after the procedure, significant clumps of hair fall from the child\'s head. It is inexcusable yet fairly common for interventional radiologists and other medical practitioners involved in these types of procedures to fail to take a few minutes to prepare patients and their families for this possibility. All health physicists working in medical facilities as well as other radiation safety professionals with access to users of radiation generating devices are encouraged to stress the importance of speaking to patients about acute radiation health effects when such effects are possible.

TPM-A.5 The Physicist-Endochrinoligist - Radiologist Team Approach for Preparation for Radioiodine Procedures

Mozzor M, High MD
New York Medical College/Westchester Medical Center; matty_mozzor@nymc.edu

This paper describes an effective method of patient preparation for oral I-131 administration involving highly collaborative activities amongst radiation safety, radiology and endocrinology personnel. Case studies are used to illustrate outcomes involving co-operative and minimally cooperative situations. For patients who require diagnostic procedures or therapeutic treatment of thyroid disorders with I-131, consistent preparation and safety information must be provided multiple times to the patient. This helps minimize radiation dose to family members and others from the patient while maximizing the efficacy of the procedure. By addressing both the benefits and necessary precautions early during the initial consult, and multiple times prior to treatment, we have seen an increase in patient compliance. During this initial post-surgical visit, endocrinology performs psycho-social prescreening and an overview of safety procedures. A physicist participates in the initial patient evaluation with the endocrinologist. A team approach is utilized to uncover potential compliance impediments, discuss the required preparatory procedures that need to be followed, and address questions of radiation risk early in the treatment planning process. The physicist, with the nuclear medicine radiologist repeats these patient instructions just prior to the administration ensuring maximum opportunity to answer patient questions and address any concerns.

TPM-A.6 Communicating Radiation Risk in Clinical Trials

Balter S, Balter R, Brenner DJ, Weisz G
Columbia University, John Jay College of Criminal Justice; sb2455@columbia.edu

Many clinical trials add a research component involving radiation to a justified baseline clinical procedure. Radiation is almost never the only risk of clinical trials; it is seldom a major risk. Research irradiation needs to be discussed in the context of radiation use in the baseline procedure as well as a discussion of all other important non-radiation risks of both the baseline and research procedures. Researchers have an ethical responsibility to effectively communicate essential risks in a balanced manner as well as in absolute terms. This is difficult due to psychological factors involving both patients and researchers. Patients who may or may not be research subjects are under stress; reducing their ability to appropriately use new information. Communication is also impeded because few researchers have sufficient knowledge to adequately discuss radiation. IRBs attempt to improve understanding by using verbose templates that often visually dominate the written informed consent form. In a sampling of IRB approved consent forms, the radiation portion of the text was 25-50% of the entire risk text; this was unrelated to anticipated research radiation usage. This volume of words overemphasizes radiation and distracts attention away from many larger potential risks. It is confusing to state risk in units of “chest x-rays,” “weeks of background,” or “airplane flights.” This convention is meaningless to most individuals without further discussion. Written materials alone are inadequate (e.g. reading comprehension will significantly decrease due to stress). A two-way interaction is needed to communicate as well as to assess the patients understanding and concerns. Researchers should be trained in both radiation-risk and patient psychology/communications. They must apply this knowledge when they seek informed consent.

TPM-A.7 Risky Business: Challenges and Success in Communicating Military Radiation Risks

Melanson M, Geckle LS, Davidson BA
Army Surgeon General, U.S. Army Center for Health Promotion and Preventive Medicine; mark.melanson@us.army.mil

Given the general public’s overall lack of knowledge about radiation and their heightened fear of its harmful effects, effective communication of radiation risks is often difficult; this is especially true when it comes to communicating the radiation risks stemming from military operations. Part of this difficulty stems from the often classified nature of many military operations along with a lingering distrust of the military that harkens back to the controversy surrounding veteran exposures to Agent Orange during the Vietnam War. Additionally, there are unique military exposure scenarios, such as the combat use of depleted uranium as anti-armor munitions that are simply not found in the civilian sector. Also, the lethality of combat often results in risk management decisions that make the use of traditional peacetime radiation safety practices unrealistic or even inappropriate. This presentation will highlight and discuss both the common and the distinctive challenges of effectively communicating military radiation risks, to include communicating through the media and dealing with international audiences. By drawing on their vast collective experience, the authors will also share risk communication success stories that were obtained through the innovative use of a matrixed, team approach that combines both health physics and risk communication expertise.

TPM-A.8 The Hardest Concepts I've Ever Tried to Communicate to a Health Physicist

Strom DJ
Battelle – Pacific National Northwest Laboratory; strom@pnl.gov

From the earliest days of radiation protection growing out of the Manhattan Project, health physicists came to realize that it was important to detect tiny activities of alpha-emitters in the presence of background radiation, or small changes in the optical density of radiation sensitive film. However, too often they did not have the vocabulary to describe their problems. The vocabulary and concepts of measurement decisions and capabilities began to be developed in the 1960s. The vocabulary that has been used has been nondescriptive, confusing, or even seriously misleading. Furthermore, most health physicists are fairly sure they know what they mean by the words they use, and too often they are wrong. One key concept that was missing in my understanding is the notion of the measurand, which ISO defines as the true value of the quantity one wishes to measure. Two other key concepts are those of population parameters contrasted with sample parameters. The answers to the following questions involve the hardest concepts to communicate to health physicists and their managers: 1) For a given measurement system, how big does the signal need to be for one to decide that it is not just noise? 2) How does one decide whether a measurement represents a positive measurand and not a false alarm? 3) What do negative counting results mean? 4) What's the smallest measurement one should record as greater than zero? 5) What is the largest measurand that one can fail to detect 5% of the time? 6) What is the smallest measurand that one will almost always detect? 7) What value of the measurand can one detect with 10% uncertainty? The long and varied list of names given to the answers to many of these questions indicates the need for a fresh start in communications to and among health physicists, managers, and regulators.

TPM-B.1 As Low As Reasonably Achievable-Based Initiatives Can Be "Risky Business"

Nichelson SM, Klauenberg BJ, Montgomery NM
US Air Force, Texas, US Air Force; Scott.Nichelson@brooks.af.mil

The concept of ALARA is frequently cited in proposals for reductions in non-ionizing radiation (NIR) exposure limits. These proposals often create road blocks to effective risk communication A recent non-peer-reviewed, internet-released compilation of advocacy papers, the Bioinitiative Report (BIR), proposed exposure limits less than 10-4 of the current IEEE standards. If adopted, these limits would lead to a decline in communication and RADAR infrastructure. The authors feel the ALARA principle is inappropriate, because NIR has a deterministic effects threshold. Reducing non-ionizing radiation exposures below the current exposure limits produces no net benefit nor reduced risk, would needlessly limit beneficial uses of NIR, and finally raise irrational fears in members of the public. The IEEE Committee On Man And Radiation (COMAR) scientific peer-reviewed article provided a critical review of the BIR. Despite this BIR advocates continue to propose that public health is at risk and argue that precaution should prevail. COMAR noted that if the limits in the BIR were applied consistently, this would impact the installation and use of traditional radio and TV broadcasting services, airport radar systems, police and other emergency communications systems, wireless telephone and wireless internet systems, and many other applications of the radiofrequency spectrum – all of which have important benefits to public health and safety. Therefore ALARA isn't always the answer.

TPM-B.2 An Effective Communication Tool for the Public: The International Nuclear and Radiological Event Scale

Jones CG
US Nuclear Regulatory Commission; cynthia.jones@nrc.gov

The International Nuclear and Radiological Event Scale (INES) is used internationally for promptly and consistently communicating the safety significance of events associated with radiation to the public. It was developed in 1990 by international experts in cooperation with the International Atomic Energy Agency (IAEA) and the Nuclear Energy Agency to provide fast, flexible and authoritative information on the occurrence of nuclear and radiological events that are of interest to the international community. Just as communicating the safety significance of earthquakes would be difficult to understand without the Richter scale, the INES system explains the significance of events from a range of activities including operational events at nuclear and radioactive materials facilities and radioactive material transport events. Countries participating in INES then classify these events in one of seven levels: Levels 4–7 are termed “accidents” and Levels 1–3 are called “incidents.” The scale is designed so that the severity of an event is about ten times greater for each increase in level on the scale. Events without safety significance are classified as “Below Scale/Level 0.” IAEA’s INES communications network currently receives event information from more than 60 countries that participate in sharing event information and then disseminates this information worldwide. Historically, the scale was applied to classify events that occur at nuclear installations, but now a revised INES Users Manual (issued in August 2009) brings together all uses such as transportation, fuel cycle, and radiation exposure events, into one single manual. This paper will present an overview of the new INES User’s Manual, how the rating scale works, and present a summary of the worldwide reporting events over the past several years.

TPM-B.3 Making ALARA Reviews Pay Off

Baker SI
Argonne National Laboratory; sambaker@anl.gov

Keeping radiation exposures as low as reasonably achievable (ALARA) is a goal without a well-defined set of numerical values. Does $1,000 per person-rem or $10,000 per person-rem make sense? Does 20% of the limit make sense for design; for operations? Do you use the administrative control level or the regulatory limit? Can you determine cost vs. benefit? What techniques and results do you use to demonstrate that you are keeping doses ALARA? This presentation will discuss these questions and provide answers on how to conduct meaningful reviews. The key to a strong ALARA program is work planning. Proper use of the Radiological Work Permit in this process is important. Review of the work by a team with the proper expertise becomes necessary when the job is of high risk and is non-routine or complex. A set of triggers is provided to help determine when to require an independent review of the work and what the level of review should be. Also provided is a checklist of techniques that work for control of exposures. The application of the process is primarily for operational radiological work, but reviews of new facility design or modification of existing facilities are also useful. Lessons learned from implementation of the process for the past 15 years at Argonne National Laboratory are discussed based on actual work experiences.

TPM-B.5 Correction to the Effective Dose Published in ICRP 80

Moussa H, Melanson M
Battelle Memorial Institute, Walter Reed Army Medical Center; hmoussa@utk.edu

The package insert accompanying a radiopharmaceutical typically includes information on the expected dose to the patient following administration of the pharmaceutical. The indicated dose is typically referenced to a publication of either the International Commission on Radiological Protection (ICRP) or a report of the Medical Internal Dose Committed (MIRD) of the Society of Nuclear Medicine. Typically the dose quantity reported is the “effective dose” of the ICRP. The effective dose is used as a surrogate for radiation risk in a comparative manner when evaluating alternative treatment modalities and in discussions with patients. In these discussion it is important that the information be clear of ambiguities and be correctly communicated to enable agreement on a treatment modality or in engaging the subject in an ongoing studies involving radiation exposure. In this paper we discuss some issues associated with the evolution of the effective dose quantity between ICRP Publication 53 and 80 which result in some inconsistent values report in Publication 80 as derived from the organ dose information in Publication 53. For some radio pharmaceuticals the numerical differences are of concern in proper and effective communication.

TPM-B.6 The Community Environmental Monitoring Program: Conveying Radiation Risk to the Public Through Direct Participation

Hartwell WT, Shafer DS, Curtis S
Desert Research Institute; ted.hartwell@dri.edu

The Community Environmental Monitoring Program (CEMP) is a radiological and meteorological monitoring program serving communities around the Nevada Test Site (NTS), the primary location where the United States conducted nuclear testing until 1992. The monitoring network includes 29 monitoring stations located across an approximately 160,000 km2 area of Nevada, Utah and California in the southwestern US. Since its inception in 1981, the CEMP has involved stakeholders directly in day-to-day operations and data collection, as well as in dissemination of information on radiological surveillance in participating communities. Modeled in part after a citizen-run monitoring program instituted around the Three Mile Island nuclear power plant following the accident there, the program seeks to address public concern about radioactivity from past nuclear testing activities by providing a hands-on role for the public, and by making the monitoring data as transparent and accessible as possible. Involvement of stakeholders in the monitoring process provides a number of benefits, including increased public confidence in monitoring results and the opportunity for stakeholders to serve their communities as knowledgeable laypersons on issues related to the Nevada Test Site, and on topics such as radiation and health. The CEMP is funded by the US Department of Energy's National Nuclear Security Administration Nevada Site Office, and is administered by the Desert Research Institute (DRI) of the Nevada System of Higher Education.

WAM-A.1 Radiation versus Radioactivity: A Communication Challenge

Strom DJ
Pacific Northwest National Laboratory; strom@pnl.gov

In our 2002 article "On Being Understood: Clarity and Jargon in Radiation Protection" (Health Phys. 82(3):373–386), Chuck Watson and I explored the difficulty of communicating the distinction between radiation and radioactive materials. This presentation highlights the challenge of distinguishing between "radiation and contamination," as some have dubbed the problem. The press, public, politicians, entertainment media, and novice radiation workers have difficulty in realizing there is a difference, much less in sorting out the fine points of the distinction. Part of the problem is the fact that many words are used with two different meanings, one for radiation and the other for radioactive material. The concepts of leak, leaking, and leakage have different meanings, for example, when applied to an x-ray tube housing and an underground radioactive waste tank. To further complicate matters, much of what people "know" about radiation and radioactivity is false. To illustrate, the local paper published the statement "a curie is the amount of radiation in 1400 pounds of uranium." The goal of this talk is to help understand what is wrong with such statements. We, as health physicists, must be very careful with our use of the language, and must strive to help students, colleagues, and the public understand and use the language correctly.

WAM-A.2 Communicating Complex Information in a Crisis

Harrington H
US Nuclear Regulatory Commission; holly.harrington@nrc.gov

George Bernard Shaw once said: "The problem with communication is the illusion that it has been accomplished." This illusion during a crisis situation has the potential to severely damage your organization's credibility– even if you are handling the actual event successfully. Using the classic communication model (speaker, channel, message, receiver and noise), this presentation discusses the primary issues that affect communicating information in a crisis – with particular attention on the difficulties of communicating complex information. Issues and solutions include: choosing the right speaker, establishing trust, being timely but accurate, picking the correct channel, choosing the right message and repeating it, listening and acting on feedback, and understanding barriers to understanding. First-hand experiences from specific crisis – including the 1989 Loma Prieta earthquake and 9/11 – as well as the difference between exercises and real events will be included. The presentation will also touch on how the media operates during a crisis, what they are looking for and why, and how to be prepared for acting as a media spokesperson. Finally, some examples of components of a crisis communication plan and pre-prepared messaging are discussed.

WAM-A.3 Lessons Learned from a Research Laboratory Pu Spill

Mengers T
National Institutes of Standards and Technology (NIST); timothy.mengers@NIST.GOV

In June 2008 an associate researcher at NIST's Boulder Colorado facility working on enhanced spectroscopy technologies broke a vial containing 0.25 grams of Plutonium powder. The resulting response, stabilization, and eventual clean up required significant resources and involved interaction with a wide range of stake holders including: impacted laboratory personnel, ancillary facility staff, the Nuclear Regulatory Commission, The Department of Energy, the municipal waste water treatment facility, local government, and Congressional oversight committees. This presentation reviews the primary factors that led to the incident, the initial response, and some of the challenges of accurately and effectively communicating technical information to a wide range of interested parties.

WAM-A.4 Communicating Health Information to Decision Makers and Non-Governmental Organizations: Experience of Chornobyl

Bebeshko V, Romanenko A, Bazyka D*
Research Center for Radiation Medicine, Kyiv, Ukraine; bazyka@yahoo.com

The Chernobyl accident gave an opportunity to study public response to the radiation accident in opposite situations starting from a restricted information system to an open society with a close contact of decision makers with non-governmental organizations and free communication with general public. A retrospective analysis shows strength and limitations of the response strategies used for during the first years after the accident with multi-agency cooperation, public information restrictions and absence of free information from non-governmental sources. Workers recruitment for cleanup activities was simplified by the use of local military offices. Sanitary teams and an organizational structure of the Civil defence showed no efficiency. Medical staff was quickly recruited from the local health care institutions. Centralization enabled quick start of radiation research programs. Problems included absence of a timely information on radiation situation and radiation protection countermeasures; delays in medical-sanitary support of evacuation that led to additional exposure; absence of the informational manuals for medical staff and booklets for public. Modern system of risks communication ensures requirements of adequacy and competitiveness to information, its scientific background and conservatism (as much care as achievable). Actions on public information and risks communication include information for professional via international sources, postgraduate education of teachers and physicians, regular workshops for staff of the population radiation protection medical units; information for decision makers at annual parliamentary sessions, national reports, informational materials for responsible agencies; communication with NGOs, physicians and teachers contacting with the exposed population, elaboration of orientation printed materials for patients and public.

WAM-A.5 Communication with Claimants and Survivors

Toohey RE
ORAU; dick.toohey@orau.org

Veterans, workers, or their survivors who have filed compensation claims with the federal government form a unique group of stakeholders. They have already suffered a debilitating disease, and the survivors have lost a spouse or parent to cancer. They have little understanding and less interest in the concept of probability of causation, and interpret the existence of compensation legislation as prima facie evidence of disease causation by radiation. Their innate sense of justice tells them they are owed compensation by a government that frequently appears to hiding behind an impenetrable bureaucracy. The scientific process of dose reconstruction is rejected as impossible; how can people who weren't even there understand their experiences? The only approach to effective communication is compassion. The communicator must sympathize with their disability or loss of a relative, and try to achieve empathy by requesting them to tell their story and then listening intently and actively. Allowing their story to be expressed and heard is often all that is desired. The communicator must display a personal interest in the claimant as a human being who has suffered, and not as a statistic. Reassurance of a communicator's personal interest in their claim and a promise to review their claim can establish an effective relationship. Specific questions about regulations, eligibility, and compensation are best referred to the operating agency, DVA or DOL. Questions about dose and the process of dose reconstruction, although rare, should be answered directly with only enough detail to satisfy the claimant. The health physicist must take pains to remember that in this particular relationship with a stakeholder, he or she must be a human being first and a technical expert second.

WAM-A.6 Communication with Fearful Population Groups in Long-term Epidemiological Cancer/ Leukemia Studies in Ukraine

Bazyka D, Romanenko A, Gudzenko N
Research Center for Radiation Medicine, Kyiv, Ukraine; bazyka@yahoo.com

The goal is to summarize the experience of the ethic standards implementation in the recent Chernobyl epidemiological study in Ukraine. In the Research center for Radiation Medicine in Ukraine from the very beginning the monitoring of cancer incidence in suffered population was organized to get strong evidences on realized health effects and to give the reliable predictions based on the real facts and their scientific analysis to avoid ungrounded either tragic or optimistic statements. Majority of performed studies were population registries based and not required personal communication with suffered persons. US-Ukrainian Case-control study on Leukemia in clean-up workers in Ukraine was initiated in 1998, is lasting at present and due to its analytical origin requires personal data by contacting and interviewing study subjects. In this connection priority was given to the ethic aspects of the study. Involved personal was trained to better communicate with clean-up workers and their relatives, standard letter was send to each potential interviewee, standard way of the phone communication was used. In the frame of the study for the first time in Ukraine the informed consent was signed by each study subject just to be interviewed. The informed consent included the brief description of the study goal, interview objectives, person for contact and logistic aspects. Participants were informed on their voluntary participation in the study and free-will finish at any time without any restrictions of social and medical service. Almost 1100 persons were interviewed. Response rate achieved was from 64% to 93% depending on the group of interviewee. Conclusion. Ethic standards Implementation in Leukemia study in Ukraine permits to form positive attitude to the Chernobyl scientific activities among involved clean-up workers and to get as complete data as possible.

WAM-B.1 Using Health Physicist Volunteers with Local Medical Reserve Corps (MRC) as Emergency Communicators

Lanza JJ
Florida Department of Health; john_lanza@doh.state.fl.us

There is currently an effort supported by the CDC, HPS, CRCPD and other organizations to encourage health physicists to volunteer for the Medical Reserve Corps (MRC) in their local communities. The MRC consists of groups of volunteers with varying professional background and expertise who all have an interest in strengthening their local public health system and providing help to their local communities in emergencies. Health physicists are needed to assist in preparation for and response after a radiological or nuclear incident. Health physicists have unique knowledge, skills and abilities, and with training, could also be effective radiation risk communicators. This risk communication opportunity could be with other MRC volunteers, the local health department staff, or with the public through the organization's public information officer (PIO). This presentation will cover the basic information needed to prepare a MRC health physicist as the technical expert to be or to assist a lead spokesperson addressing radiological or nuclear issues in a crisis.

WAM-B.2 What Have We Learned about Public Communications for Radiation Emergencies from Audience Research?

Ansari A, McCurley MC, Pollard K, Miller CW, Whitcomb, Jr. RC
Centers for Disease Control and Prevention; AAnsari@cdc.gov

The Centers for Disease Control and Prevention (CDC) strives to prepare the public and public health professionals for a radiological emergency incident by providing information and education, as well as developing messages to be used intra-event. CDC's Radiation Studies Branch (RSB) has conducted audience research to better understand the public's knowledge, attitudes, and behaviors related to a radiation emergency in order to guide information, education, and message development. Key findings from the research show that (1) the public's most persistent concern is how to protect themselves and their families; (2) people resist reassuring messages; (3) most people have a poor understanding of radiation emergency terminology and concepts, including terms such as "shelter in place" and "plume;" (4) people need to understand why they should take a particular protective action in order to accept it; and (5) the public will look to local responders and local officials as the most credible spokespersons in a radiological emergency. This presentation will describe these and other research findings and how RSB is applying them to its communication programs and strategies.

WAM-B.3 Communication of Radiation Risks and Benefits in Decision Making

Locke PA, McBaugh D, Tenforde TS

The Johns Hopkins University, Bloomberg School of Public Health, Washington State Department of Public Health, Office of Radiation Protection, National Council on Radiation Protection and Measurements; plocke@jhsph.edu

Effective communication of radiation benefits and risks has become an increasingly important aspect of making and implementing decisions on radiation health protection. The National Council on Radiation Protection and Measurements (NCRP) will address this subject in its 46th Annual Meeting to be held in Bethesda, MD on March 8-9, 2010. The primary topics to be featured at the meeting include: (1) methods of successfully conveying information on beneficial radiation applications and potential health and environmental risks; (2) communicating benefits and risks in medical applications of radiation; (3) public and emergency responder communications following nuclear or radiological acts of terrorism; and (4) communications on public health and environmental protection aspects of nuclear facilities, materials, and radioactive waste disposition. Modern social networking tools such as Twitter, Facebook and blogging will also be discussed as effective methods for communication. An overview will be given of the sessions and special lectures at the 2010 NCRP Annual Meeting. [Information on the agenda and registration for the meeting will be available at http:NCRPonline.org.]

WAM-B.4 Openess, Transparency, Communication; The NRC and its Stakeholders

Milligan P

US Nuclear Regulatory Commission; patricia.milligan@nrc.gov

Nuclear regulation is the public's business, and it must be transacted publicly and candidly. The public must be informed about and have the opportunity to participate in the regulatory processes as required by law. Open channels of communication must be maintained with Congress, other government agencies, licensees, and the public, as well as with the international nuclear community. The NRC has implemented a number of programs to enhance stakeholder communications. This presentation will discuss outreach efforts on the difficult topics of emergency preparedness, nuclear power plant license renewal, nuclear power plant events of public interest, and remediation.

WAM-B.5 To Become Better Communicators We Need to Deal with Radiation Mythology

Johnson RH

Dade Moeller and Associates; ray.johnson@moellerinc.com

Throughout our careers in health physics we have all been confronted by workers, the public, and the media reacting from their beliefs in radiation myths. Unless people have special training in radiation, it seems that everything they believe about radiation is mythology. This should not be too surprising since most of what people hear about radiation is mythology. A myth is defined as a collective opinion or belief that is based on false premises or is the product of fallacious reasoning. For example, the media perpetuate radiation mythology by continuing to define radiation as "deadly radiation." People have heard these two words together for so long (more than 60 years) that they are now accepted as the basis for understanding radiation. With such myths firmly ingrained, it is little wonder that people so often react to radiation with fears that seem out of proportion to the risks as we would know them. Radiation myths abound in the areas of health effects, what is safe, nuclear power, radioactive waste, nuclear medicine, cancer treatment, x-rays and CT, fertility, effects on DNA, effects on children (genetic effects), measurements, atomic bombs, WMDs, food irradiation, baggage x-ray scanning, concerns for individual radionuclides (such as uranium, radium, plutonium), cell phones, Chernobyl, and Three Mile Island. Radiation mythology and folklore about radiation have led to widespread beliefs that there is no safe level. Opposition to nuclear technology and safe uses of radiation is typically built on radiation myths. People have not been told how to evaluate the risk of radiation (steps from cause to effect) and commonly assume that if it is there, it is automatically bad for you. While better information can be helpful, a better way may be to educate people on how to make their own evaluations. We will review radiation myths and strategies for countering these myths.

WAM-B.6 Putting Radioactivity in Perspective with Radon Risk Communication

Smith TY

Spruce Environmental Technologies, Inc.; tsmith@spruce.com

Combining the work of several risk communications experts, this presentation challenges the assumption that 'presenting the public with enough information will enable them to make a good decision' about their relative risk from various radioactive sources and appropriate responses to that risk. Burgeoning research by the neurological sciences supports decades of studies in psychology and sociology that differentiate how and why different people respond differently to different methods of communicating risk. 'Fear tactics' used to urge an apathetic public to reduce their exposure to household radon gas have been maligned as unduly frightening people into irrationality about all radioactive risks. Instead, research shows that individuals live with a fairly constant anxiety level about risk in general; it's just the objects of their fear that change. This presentation shows that giving people the tools and getting them to respond with action to the radon message to test and fix can more readily and quickly help them put other radioactive risks into perspective.

WAM-B.7 Homeland Security Blankets - Care Packages for the Worried Well—Revisited

Stansbury P, Strom DJ

Pacific Northwest National Laboratory; paul.stansbury@pnl.gov

Much of the initial radiation protection following the use of a radiological dispersion device (RDD) or a terrorist nuclear weapon will be done by non-health physicists. First responders, such as police, fire, emergency medical technicians, municipal workers, national guard, and healthcare workers will do the brunt of the containment, boundary setup, decontamination, etc. The proliferation of survey instruments and training courses ensures that there will be lots of "experts" from fields outside of health physics doing applied radiation protection. What, then, is the role of the professional health physicist? We should bring our comprehensive knowledge of radiation and its effects to bear on the enormous problem of the "worried well," those without trauma injuries, and perhaps without significant contamination or dose, who are predicted to overwhelm the health care system. Our role can be to use our credibility, based on our depth and breadth of interdisciplinary knowledge, to tell people what not to worry about. We will be asked "Is it safe?" The answer that needs to be heard the most often is "I don't know about 'safe,' but I know it is not dangerous." We should present, and explain, why radiation protection standards and practices differ in emergencies, and why and how intervention after a disaster differs from planning for beneficial uses of radiation. Leading by example, we can show that panic or terror is not an appropriate response to a radiological terrorist event, and explain why. Health physicists can provide the all-important peace of mind to those who need it, thus minimizing civil chaos and stress-related illness. *Pacific Northwest National Laboratory is operated for the U.S. Department of Energy by Battelle under Contract DE AC06 76RLO 1830.

WAM-B.8 Radiation Risks in Everyday Life

Rutherford PD

The Boeing Company, Santa Susana Field Laboratory; philip.d.rutherford@boeing.com

Risk means very different things to scientists and the public. Risk, to the scientist, is undesired consequence times probability. It is quantifiable, albeit with appropriate assigned uncertainty. Risk, to the public, sometimes means fear, emotion and outrage, and is definitely not judged in a quantifiable manner. Risk communication gurus warn against the use of quantitative risk comparisons when trying to explain the impact (or non-impact) of environmental issues to the public. For instance, we are warned not to compare risk from a Superfund site to the risk of driving because driving is claimed to be a voluntary lifestyle choice (a questionable judgment), whereas living next to a Superfund site is not voluntary. Nevertheless numbers are what scientists and engineers use to communicate with each other. Math is the language of science. Therefore environmental scientists have a real problem with risk communication. This is compounded even more in the health physics and radiation arena where we are required to calculate small "theoretical" radiation risks based on small radiation exposures. Some health physicists believe these theoretical risks, some health physicists do not. The public either believes these theoretical risks, or more usually believes that they are underestimated. Notwithstanding the aforementioned cautionary statements, this paper provides comparisons of various regulated radiation risks vs. various non-regulated radiation risks using the same regulatory methodology. The conclusion is that enormous resources are being spent regulating theoretical radiation risks that are orders of magnitude smaller than theoretical radiation risks we all face in everyday life. It is anticipated that the majority of the intended audience of this paper will already appreciate and understand this material. It is also hoped that at least some of the public may also begin to appreciate the message.

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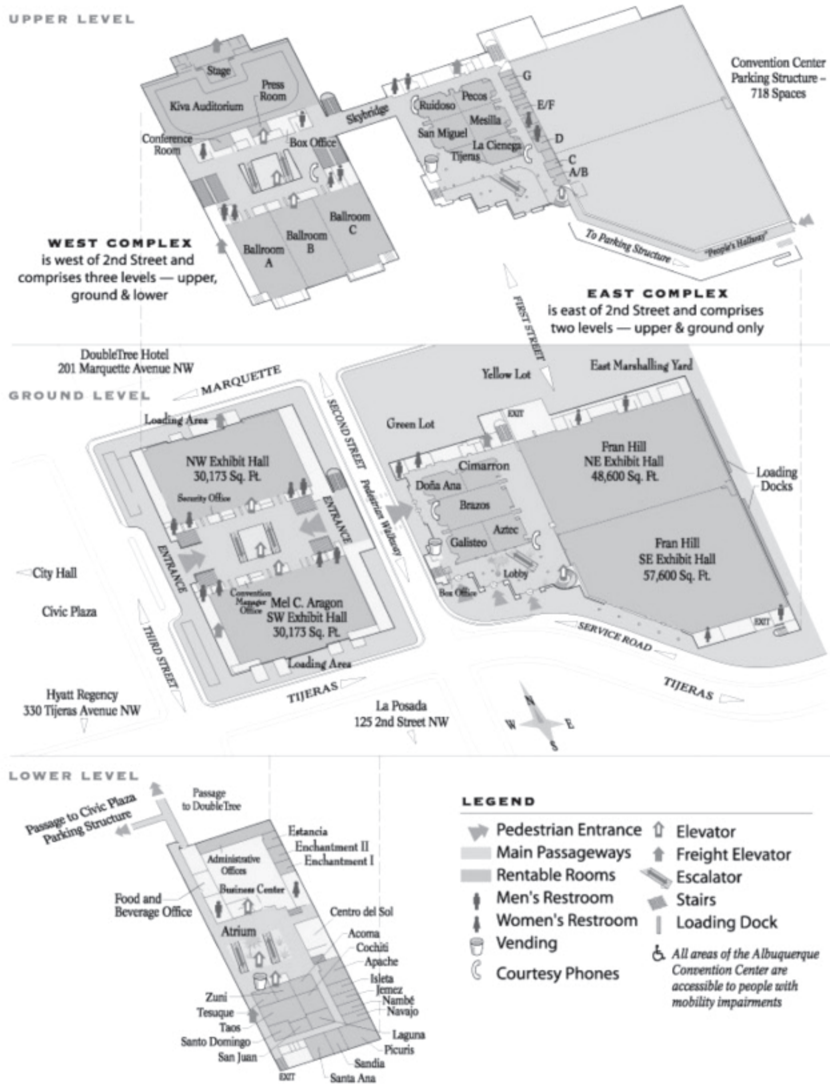

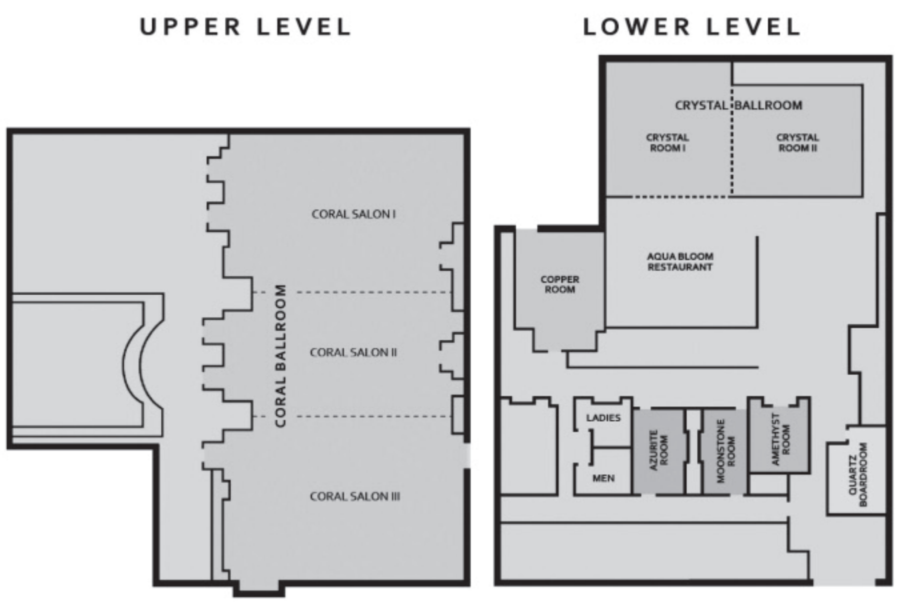

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