

PRELIMINARY PROGRAM



48th Annual Meeting of the Health Physics Society

(American Conference of Radiological Safety)

***19th Biennial Campus Radiation
Safety Officers Meeting***



July 20-24, 2003

*Town and Country Resort and Convention Center
San Diego, California*

Health Physics Society Committee Meetings

Friday, July 18, 2003

ABHP BOARD MEETING

9:00 am - 5:00 pm

Saturday, July 19, 2003

FINANCE COMMITTEE

8:00 am - Noon

ABHP BOARD MEETING

9:00 am - Noon

STRATEGIC PLANNING COMMITTEE

1:00 - 5:00 pm

AAHP EXECUTIVE COMMITTEE

1:00 - 5:00 pm

CONTINUING EDUCATION COMMITTEE

1:00 - 5:00 pm

HPS EXECUTIVE COMMITTEE

1:00 - 5:00 pm

STUDENT BRANCH OFFICERS

2:00 - 4:00 pm

Sunday, July 20, 2003

HPS BOARD OF DIRECTORS

8:00 am - 5:00 pm

VENUES COMMITTEE

8:30 am - 4:30 pm

AAHP EXECUTIVE COMMITTEE

9:00 am - Noon

PROGRAM COMMITTEE

12:30 - 2:00 pm

Monday, July 21, 2003

MEMBERSHIP COMMITTEE

Noon - 2:00 pm

PUBLICATIONS COMMITTEE

Noon - 2:00 pm

CHAPTER COUNCIL MEETING

1:00 - 2:00 pm

AAHP STRATEGIC PLANNING WORKSHOP

1:00 - 3:00 pm

AEC ACCREDITATION SUBCOMMITTEE

2:00 - 4:00 pm

PUBLIC EDUCATION COMMITTEE

2:30 - 4:30 pm

**AAHP PROFESSIONAL DEVELOPMENT
COMMITTEE**

3:00 - 4:00 pm

Tuesday, July 22, 2003

LABORATORY ACCREDITATION POLICY

9:00 am - Noon

ABET EVALUATORS

10:00 am - Noon

**HEALTH PHYSICS PROGRAM DIRECTORS
ORGANIZATION**

Noon - 2:00 pm

LEGISLATION AND REGULATION COMMITTEE

Noon - 2:00 pm

SCIENCE TEACHERS WORKSHOP COMMITTEE

Noon - 2:00 pm

LABORATORY ACCRED. ASSESSMENT

Noon - 2:30 pm

LIAISON COMMITTEE

2:00 - 4:00 pm

Wednesday, July 23, 2003

AFFILIATES COMMITTEE

7:30 - 9:30 am

SUMMER SCHOOL COMMITTEE

Noon - 2:00 pm

ACADEMIC EDUCATION COMMITTEE

2:00 - 4:00 pm

Thursday, July 24, 2003

LOCAL ARRANGEMENTS COMMITTEE

7:30 - 9:30 am

HPS BOARD OF DIRECTORS

8:00 am - Noon

HPSSC/N13/N43 MEETING

8:00 am - Noon

PROGRAM COMMITTEE

Noon - 3:30 pm

Table of Contents

Schedule at a Glance	2
Important Events	4
General Information	5
Tours and Events Information	7
Technical Tour Information	10
Discounted Tickets-Theme Parks, Attractions	11
Airline/Car Rental Information	14
Current Events/Works-in-Progress Information	14
Placement Information	15
CRSO Information	16
Scientific Program	17
AAHP Courses	37
Professional Enrichment Program	37
Continuing Education Courses	49
Hotel Reservation Form	51
Summer School Announcement	52
Annual Meeting, Social Registration & PEP Form	55

Key Dates

Current Events/Works-In-Progress Deadline	June 6
Summer School Registration Deadline	June 15
Hotel Registration Deadline	June 27
Social/Technical Preregistration Deadline	June 27
HPS Annual Meeting Preregistration Deadline	June 27
PEP Preregistration Deadline	June 27
Summer School, Point Loma Nazarene University	July 14-18
Professional Enrichment Program	July 20-24
HPS 48th Annual Meeting	July 20-24
American Board of Health Physics Written Exam	July 21
CRSO	July 23-24

Registration Hours

Registration will take place at the San Diego Town and Country Resort and Convention Center:

Saturday, July 19	2:00 - 5:00 pm
Sunday, July 20	7:00 am - 7:00 pm
Monday, July 21	8:00 am - 4:00 pm
Tuesday, July 22	8:00 am - 4:00 pm
Wednesday, July 23	8:00 am - 4:00 pm
Thursday, July 24	8:00 am - Noon

Saturday, July 19

AAHP 1
Respirator Program Elements and Requirements of the New NRC & OSHA Regulations. *Darrell Bevis, Bevis Respirator Consultants*
8:00 am - 5:00 pm *Royal Palm 5/6*

AAHP 2
Responding to Large-Scale Dispersion of Radioactive Material. *Carson A. Riland, Bechtel Nevada, and William G. Rhodes III, Sandia National Laboratories*
8:00 am - 5:00 pm *Royal Palm 1/2*

AAHP 3
Materials and Methods for Training Responders to Radiation Emergencies. *Allen Brodsky, Marlow Stangler, Brooke Buddemeier; LLNL*
8:00 am - 5:00 pm *Royal Palm 3/4*

LAC Poolside Fiesta
6:00 - 8:00 pm

Sunday, July 20

PEP **1-A thru 1-I**
8:00 - 10:00 am

PEP **2-A thru 2-I**
10:30 am - 12:30 pm

PEP **3-A thru 3-I**
2:00 - 4:00 pm

Welcome Reception
6:00 - 7:30 pm *TBD*

Monday, July 21

CEL-1 The Susceptibility of the Preimplantation, Preorganogenic Embryo to the Abortogenic and Teratogenic Effects of Environmental Toxicants; A Reanalysis of the "All or None Period."
7:15 - 8:15 am *Pacific 1*

CEL-2 Current Issues in Radiation Epidemiology
7:15 - 8:15 am *Pacific 2*

ABHP Exam - Part I
8:00 - 11:00 am *Garden Ballroom*

MAM-A Plenary Session
8:30 - 11:30 am *Golden Ballroom*

Lunch in Exhibit Hall for all Registrants and Opening of Exhibits
Noon - 1:30 pm *Atlas Ballroom*

PEP Program
12:15-2:15 pm

M-1 Why You Can't Analyze for ²²⁸Ra Directly

M-2 ICRP-66 Applications and Software: Software and Applications of the ICRP Human Respiratory Tract Model (ICRP66) for Health Physics and Industrial Hygiene

M-3 Skin Injuries and Interventional Fluoroscopy — Why They Occur and How to Reduce the Risk

M-4 Assessment of Radiological Emergencies

ABHP Exam - Part II
12:30 - 6:30 pm *Garden Ballroom*

HPS Chapter Council
1:00 - 2:00 pm *TBD*

Poster Session
1:30 - 3:00 pm *Golden Ballroom/ Atlas Ballroom*

MPM-A Safety & Security of Radioactive Sources
3:00 - 5:00 pm *Golden Ballroom*

MPM-B Disposition of Solid Materials from Radiologically Regulated Facilities
3:00 - 5:30 pm *Pacific 1*

MPM-C External Dosimetry
3:00 - 5:45 pm *Pacific 2*

MPM-D RESRAD Code Developments and Applications
3:00 - 5:30 pm *Pacific 3*

MPM-E Internal Dosimetry/Bioassay
3:00 - 5:15 pm *Sheffield/Hampton*

Student Reception
5:30 - 6:30 pm *Sunset*

Tuesday, July 22

CEL-3 Radiation Threshold – What Do Basic Studies Tell Us?
7:15 - 8:15 am *Pacific 1*

CEL-4 Nuclear/Radiological Emergency Preparedness in Pennsylvania.
7:15 - 8:15 am *Pacific 2*

TAM-A Emergency Planning/Response
8:30 - 11:45 am *Golden Ballroom*

TAM-B Medical Health Physics Section Session
8:30-11:30 am *Pacific 1*

TAM-C Environmental
8:30 am - Noon *Pacific 2*

TAM-D Dose Reconstruction Under the Energy Employees Occupational Illness Compensation Program
8:30 am - Noon *Pacific 3*

TAM-E Government Section Special Session
8:30 - 11:45 am *Sheffield/Hampton*

Medical HP Section Meeting
11:30 am *Pacific 1*

AAHP Awards Luncheon
Noon - 1:30 pm *TBD*

PEP Program
12:15-2:15 pm

T-1 Health Physics Archeology: Dose Reconstructions Conducted by the Centers for Disease Control and Prevention.

T-2 Shielding Of Medical Radiation Therapy Facilities – From Design To Construction.

T-3 Closing the Loop on Audit Corrective Actions.

T-4 Common Issues and Concerns in Radiological Emergency Response Preparedness and Deployment.

TPM-A J. Newell Stannard and the University of Rochester
2:30 - 5:30 pm *Golden Ballroom*

TPM-B AAHP Special Session: Medical Health Physics - The Future of Credentialing
2:30 - 5:15 pm *Pacific 1*

TPM-C Source Recovery Special Session
2:30 - 3:45 pm *Pacific 2*

TPM-C Operational Health Physics
4:15 - 5:30 pm *Pacific 2*

TPM-D Dose Reconstruction Under the Energy Employees Occupational Illness Compensation Program
2:30 - 3:30 pm *Pacific 3*

TPM-D Risk Analysis
4:00 - 5:15 pm *Pacific 3*

TPM-E Government Section Special Session
2:30 - 3:30 pm *Sheffield/Hampton*

Government Section Business Meeting
4:00 pm *Sheffield/Hampton*

AAHP Open Meeting
5:15 pm *Pacific 1*

HPS Awards Reception and Dinner
7:00 - 10:00 pm *Grand Ballroom*

Wednesday, July 23

CEL-5 Solar Evolution and its Effects on Background Cosmic Radiation Levels through Time.
7:15 - 8:15 am Pacific 1
CEL-6 Emergency Response Instrumentation Issues.
7:15 - 8:15 am Pacific 2

WAM-A RSO/CRSO Special Session
8:30 - 11:15 am Golden Ballroom

WAM-B Accelerator Section Special Session
8:30 am - Noon Pacific 1

WAM-C Decommissioning Section Special Session
8:30 - 11:30 am Pacific 2

WAM-D Regulatory/Legal Issues
8:30 am - Noon Pacific 3

WAM-E NESHAPs Special Session - Radioactive Air
8:30 - 11:00 am Sheffield/Hampton

RSO Section Business Meeting
11:15 am Golden Ballroom

Decommissioning Section Business Mtg
11:30 am Pacific 2

PEP Program
12:15-2:15 pm

W-1 Managing and Auditing University Radiation Safety Programs.

W-2 Introduction to the Health Physics of Electromagnetic Fields (0-300 GHz).

W-3 Critical Decisions for First-Time and Experienced Managers (or How I Learned to Love the Org Chart).

W-4 The Experimental Basis for a Biokinetic Model of Radionuclide-Contaminated Wounds.

WPM-A Bioeffects
2:30 - 5:00 pm Golden Ballroom

WPM-B Waste Management
2:30 - 5:15 pm Pacific 1

WPM-C Decommissioning
2:30 - 3:30 pm Pacific 2

WPM-C Accelerator Health Physics
4:00 - 4:45 pm Pacific 2

WPM-D Chernobyl New Safe Confinement
2:30 - 5:30 pm Pacific 3

WPM-E DOE NESHAPs Meeting - Radioactive Air
2:30 - 5:30 pm Sheffield/Hampton

CRSO Meeting
2:30 - 5:00 pm Royal Palm 5/6

Accelerator Section Business Meeting
4:45 - 5:30 pm Pacific 2

HPS Business Meeting
5:30 - 6:30 pm Pacific 1

Train the Trainer Workshop
6:30 - 7:30 pm TBD

Aerosol and Other Radiation Measurements
6:30 - 8:30 pm Pacific 3

Thursday, July 24

CEL-7 Non-Ionizing Radiation (NIR) Standards Update.
7:15 - 8:15 am Pacific 1

CEL-8 Update on New Radionuclide Therapies in Nuclear Medicine.
7:15 - 8:15 am Pacific 2

CRSO Meeting
8:15 am - 4:30 pm Royal Palm 5/6

THAM-A Medical Health Physics
8:30 am - Noon Golden Ballroom

THAM-B MARSSIM
8:30 am - Noon Pacific 1

THAM-C Instrumentation
8:30 am - Noon Pacific 2

THAM-D Sampling Airborne Nuclear and Biological Contaminants
8:30 - 10:00 am Pacific 3

THAM-E Experiences with Academic Accreditation of Health Physics Programs Under ASC ABET 2000
8:30 - 11:30 am Pacific 6/7

PEP Program
12:15-2:15 pm

TH-1 Biomedical Ethics for the Health Physicist.

TH-2 Radon Reduction at a Former Uranium Processing Facility (Fernald).

TH-3 Mixed Waste Management at a Large Academic University / Medical Institution.

TH-4 Microbial and Antimicrobial Resistance Risk Analysis: Sharing Lessons Learned Across Risk Analytic Disciplines.

Registration Hours

All Registration takes place at the Town and Country Hotel

Saturday 2:00 - 5:00 pm

Sunday 7:00 am - 7:00 pm

Monday 8:00 am - 4:00 pm

Tuesday 8:00 am - 4:00 pm

Wednesday 8:00 am - 4:00 pm

Thursday 8:00 am - Noon

Exhibit Hall Hours

Atlas Ballroom

Monday Noon - 5:00 pm

Tuesday 9:30 am - 5:00 pm

Wednesday 9:30 am - Noon

2003 Exhibitors (as of 4/7/03)

- ADCO
- AEA Technology QSA
- Alpha Spectra
- American Nuclear Society
- Bartlett Nuclear
- Bionomics
- Canberra
- Cardinal Health
- Chase Environmental
- Duratek
- F&J
- Femto-TECH, Inc.
- Gamma Products
- Health Physics Instruments
- Hi-Q
- ICN
- Industrial Video
- IPL
- JL Shepherd
- Landauer
- Ludlum
- MGPI
- ORTEC
- Overhoff Technologies
- Perma Fix
- Philotechnics
- Princeton Gamma Tech
- Protean
- Pulcir
- Radiation Safety Academy
- RSO
- SAIC
- Saint-Gobain Crystals & Detectors
- Siemens Environmental
- Soltec
- STL Richland
- Technical Associates
- Thermo Eberline
- Thomas Gray & Associates, Inc.
- TSA Systems

Important Events!

Welcome Reception

The Welcome Reception will be held Sunday, July 20 from 6–7:30 pm at the Town and Country Hotel.

Exhibits

Free Lunch! Free Lunch! – Noon, Monday, July 21. All registered attendees are invited to attend a complimentary lunch in the exhibit hall immediately following the Plenary Session.

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

Sessions

All Courses and Sessions will be held at the Town and Country Hotel and Resort.

Awards Banquet

Tuesday Evening Awards Reception and Banquet
7:00 - 10:00 pm

Online registration available

Different this Year!

Saturday night party by the pool hosted by the **San Diego LAC**.

All sessions have **computer projection** as the preferred format for presentation.
No slide presentations this year.

CRSO Meeting, Wednesday and Thursday, July 23 and 24, in conjunction with the HPS Meeting. Discounted registration to attend both the HPS and CRSO Meetings.

Things to Remember!

All posters up Monday–Wednesday in Exhibit Hall

Poster Session featured Monday, 1:30-3:00 pm – No other sessions at that time

PEP Refund Policy – See page 37

Mentoring Program - See page 14. Sign up on Registration form

Registration Policy: Unless appropriate check/charge information accompanies your form, you will NOT be considered preregistered.

Meeting Refund Policy: **Request for refunds will be honored** if received in writing by June 27. **All refunds will be issued AFTER the meeting and will be subject to a \$35.00 processing fee. NO REFUNDS WILL BE ISSUED AT THE MEETING.** Refunds will not be issued to no-shows.

AAHP Awards Luncheon

The AAHP is sponsoring an Awards Luncheon on Tuesday, July 22, from Noon-1:30 pm.

The following rate structure will apply:

- 1) Persons certified in 2002 Free
- 2) CHPs other than #1 \$10.00
- 3) Guests and others wishing to attend..... \$15.00

To sign up for the Luncheon, use the Registration form in the back of this Preliminary Program.

HPS SAN DIEGO 2003



WELCOME

It's with great pleasure that the San Diego Chapter of the Health Physics Society welcomes you to San Diego. We will be hosting the 48th Annual Meeting of the Health Physics Society (2003 American Conference of Radiological Safety). The meeting will be held July 20-24 at the Town & Country Hotel and Convention Center. Come join your colleagues to learn the latest developments in radiation safety and enjoy all San Diego has to offer.

SAN DIEGO

San Diego, considered California's birthplace, was discovered in 1542 by Spanish explorer Juan Rodriguez Cabrillo. The city itself is named for a Spanish ship, the San Diego, which sailed into the harbor on Saint Diego's name day, sixty years after the Spanish had claimed the area. Franciscan friar Junipero Serra established a mission along the San Diego River in 1769. The site can still be seen in the Old Town Historic Park. In 1848 the Mexican War saw the annexation of California to the United States and the San Diego port was commandeered by the US Navy. World War II brought the Pacific Naval Headquarters to the city from Pearl Harbor. Today, the port of San Diego remains as home to the Pacific Naval Third Fleet. Modern San Diego is the seventh largest city in the United States, with over 1.3 million residents and a rich cultural heritage.

WEATHER

San Diego's southern coastal location combines the warm dry air of the desert with the cool breezes of the Pacific, creating a fabulous temperate climate. The average temperature for July is 71 degrees Fahrenheit (20 degrees Celsius), and our typical day is sunny and mild with low humidity. It is unlikely that you will need a raincoat during this time given the average precipitation for July is less than 0.1 inches. Days will be warm and evenings will be cool, so be sure to bring a sweatshirt or sweater. More importantly, be sure to pack shorts and swimwear. Few restaurants require formal dress, and most welcome casual attire.

LODGING

The 2003 American Conference of Radiological Safety will be held at the Town and Country Resort & Convention Center. The 32 acre facility located in Mission Valley just 6 miles north of downtown, will be the official conference headquarters. The convention center is located on the resort property, offering convenient access to conference activities and exhibitors while family members enjoy one of the four swimming pools or five distinctive restaurants. The Town and Country resort is adjacent to San Diego's premier shopping mall, Fashion Valley, and the 27-hole Riverwalk Golf Club. The light rail San Diego Trolley, with a stop on the property, provides easy access to Qualcomm Stadium, Old Town, Downtown/Gaslamp Quarter, and Tijuana. Be sure to mention the Health Physics Society when making reservations.

TRANSPORTATION

The San Diego International Airport (Lindbergh Field) is located near downtown and just six miles south of the Town & Country resort in Mission Valley. Ground transportation — taxis, shuttles and limos — can be found across the street from the terminal exits, just beyond the curbside drop-off and pick-up lanes. Passengers must use the skybridge to cross the street. Look up. You'll see it. Cloud 9 Shuttle: (800) 974-8885 offers service from the airport to Town & Country resort at special rate of \$8.50 each way. Pay shuttles are located directly next to the taxi island and also are monitored by a dispatcher. Taxi service to Mission Valley is available for about \$16.00.

HOSPITALITY SUITE

A Hospitality Suite will be available in the Terrace Pavilion at the Town & Country Hotel. Come meet with friends and relax by the pool and learn about the available attractions in San Diego. Local HPS members will be on hand to help with planning day trips, restaurant recommendations, and navigating San Diego's highways. On Monday morning from 8 to 9 am, we invite all registered companions to an official welcome from the meeting's tour representative, The Meeting Manager, who will provide an orientation to San Diego and answer any questions you might have.

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

CHILDCARE

Arrangements for childcare are the responsibility of the guest. Rates are dependent upon the childcare situation. The Town and Country Hotel does not endorse or assume responsibility for any childcare arrangements; however guests have used the following service in the past.

Panda's Professional Care Service
7677 Ronson Road
San Diego, CA
858-292-5503

TUESDAY NIGHT AWARDS BANQUET

An annual tradition not to be missed. Enjoy an elegant dinner and the ambience of the hotel's Grand Ballroom. Award presentations will immediately follow the dinner. All attendees are strongly encouraged to stay and show your support for the award recipients. This event will take place in the Grand Ballroom within the Town & Country Convention Center from 7:00 to 10:00 pm.

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

Saturday, July 19

SAN DIEGO LAC POOLSIDE FIESTA

6:00 - 8:00 PM

Free

For those of you arriving on Saturday, come and meet the locals in a casual atmosphere. This is a chance to meet up with friends old and new. Join us for cervezas, margaritas and antojitos by the pool at the Terrace Pavilion. This event is sponsored by the San Diego Chapter Health Physics Society.

Sunday, July 20

AMERICA'S FINEST CITY TOUR

1:00 - 5:00 PM

Preregistration \$20/Onsite \$25

San Diego is known as 'America's Finest City', and this customized tour will highlight the many reasons why. A native tour guide will educate guests on the history of San Diego and charm them with its beauty. Areas featured include Coronado Island, home of the Hotel Del Coronado; the Embarcadero (Spanish for 'the landing') where guests will see Navy ships, tuna seiners, pleasure boats and world class cruise ships side-by-side; and the beauty and cultural wealth of Balboa Park.

Roundtrip transportation from the Town & Country via a deluxe motor vehicle, will include shopping at one of the areas' shops and boutiques. 'America's Finest City' Tour is a great introduction to San Diego.

Monday, July 21

WATERWAYS AND HIGHWAYS - A TOUR OF SAN DIEGO

9:15 AM - 1:15 PM

Preregistration \$35/Onsite \$42

San Diego's majestic beauty is unparalleled. With a multitude of unique and wonderful attractions and communities, this is truly 'America's Finest City.'

Guests will visit Seaport Village and beautiful Balboa Park. Each area offers distinct boutiques and galleries with a wonderful array of exceptional, handcrafted items in addition to award-winning restaurants.

This tour continues on a tour of San Diego Bay, one of the most beautiful natural harbors in the world. The cruise takes in 21 miles of scenic waterways. From the water, visitors will view picturesque Harbor and Shelter Islands, Point Loma (home of the Cabrillo Monument), the magnificent Coronado Bay Bridge and the U.S. Pacific Naval Fleet.

LIFESTYLE LA JOLLA

1:00 - 5:00 PM

Preregistration \$20/Onsite \$25

La Jolla is a scenic village located on seven spectacular miles of sandy beaches, stunning cliffs and amazing caves. The Cove and the caves are the most intriguing and beautiful natural points of interest in La Jolla.

La Jolla is an exquisite combination of a Mediterranean resort atmosphere and Southern California fun. La Jolla's Prospect Street is known locally for its upscale boutiques, brimming with designer clothing, jewelry, art and antiques. Chic cafes and elegant restaurants feature delicious menus to complement the legendary sunsets over the sparkling Pacific Ocean. This seaside town is home to the UCSD-Scripps Institution of Oceanography, Stephen Birch Aquarium & Museum, Torrey Pines State Park, Torrey Pines Golf Course, the San Diego Museum of Contemporary Art and the Tony-Award-winning La Jolla Playhouse.

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

BASEBALL GAME AT QUALCOMM STADIUM THE SAN DIEGO PADRES VS. ST. LOUIS CARDINALS

6:00 - 10:00 PM

Preregistration \$30

Price covers ticket and trolley ride. Pre-purchased Tickets are in limited supply. First come, first serve.

Take me out to the ball game... What a great way to celebrate one of America's finest traditions in none other than 'America's Finest City.' Home to the Padres, San Diego is the place to be for non-stop sporting action. The trolley ride is literally minutes away from the stadium.

Tuesday, July 22



5K FUN RUN/WALK

6:30 AM

Preregistration \$30/Onsite \$35

Run limited to 50 persons

Test your legs and lungs against those of your fellow HPs on a scenic 5K course on the shores of Mission Bay. A radioisotope will be assigned to each runner for bib identification. Pricing includes transportation, T-shirt, prizes and refreshments.

GOLF AT CORONADO GOLF COURSE

9:00 AM - 5:00 PM

Preregistration \$75/No Onsite Registration

Tee times start at 10:00 am

The HPS golf tournament will be held at the Coronado Golf Course. One of the most scenic golf courses in the area with the San Diego Bay running along side four holes and views of downtown and mountains beyond. The typical one club breeze off the bay and bermuda-kikuyu mix of grasses makes this 6590 yard course (slope 71.5) play a little longer than its measured yardage. So grab your sticks and enjoy a round of golf at one of San Diego's most treasured tourist locations.

Tee times start at 10:00 am with a sequential start. Tournament fees include green fees, golf cart, bus transportation to and from the Town & Country, box lunch and post-tournament raffle.

SOUTH OF THE BORDER - EXPLORING TIJUANA

9:30 AM - 1:30 PM

Preregistration \$55/Onsite Registration \$62

Tijuana is San Diego's neighbor to the south and offers a nearby international experience. The Southern California connection to Tijuana grew in the early 20th Century after the Tijuana Fair of 1915 showcased bullfights, horse racing, boxing, cockfighting and casino gambling. Curious San Diegans flocked down in droves and word quickly spread throughout the Southwest about Tijuana's reputation as the 'wildest of the wild.' By now the fledgling community of Hollywood had heard all about Tijuana and its irresistibly short three-hour drive down the California coast. That trek soon became a pilgrimage when, in 1920, the United States outlawed alcoholic beverages and Tijuana welcomed America's thirsty citizens with open arms that have never closed.

Tijuana is a much tamer place now and is best known for its fabulous shopping, cultural and dining opportunities. Great savings are found on international crafts, clothing, liquor, china, silver, leather and other fine objects. Guests will be oriented to the various shopping areas and assisted in locating the 'best buys' by our knowledgeable Tour Director.

To complete the day, a delicious Mexican meal will be enjoyed at one of the many restaurants in downtown Tijuana. This Event includes exclusive, roundtrip transportation via deluxe motor vehicle, border insurance fees, narrated tour of Tijuana, shopping on Revolución Avenue, guided walking tour to the 'best bargain' shops, preferred shopping souvenir map/guide, and a delicious Mexican lunch.

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

Wednesday, July 23

CORONADO CHARM WALKING TOUR

8:30 AM - 12:30 PM

Preregistration \$29/Onsite \$34

Rich in history, natural beauty and a charming ocean village atmosphere, Coronado is most deserving of its royal 'nickname' - the Crown City. Bordered by the Pacific Ocean, Glorietta Bay and San Diego Bay, this picturesque seaside city is linked to the Southern California coastline and the city of San Diego by the graceful and stately San Diego - Coronado Bridge, and to the south by a narrow strip of land known as the Silver Strand.

Guests will enjoy Coronado's beautiful architecture and colorful history during a narrated walking tour. The tour may begin at sugar magnate John Spreckels' Mansion or the Hotel del Coronado's clock tower and will showcase the Wallis Simpson home (the Duchess of Windsor); the home of Frank Baum, author of the 'Wizard of Oz'; and other notable celebrities. Guests will venture by the exterior of the world-famous Hotel Del Coronado. More than 100 years old, 'The Del' sits on one of the most beautiful beaches along the Pacific Ocean. Her guest book reads like a 'Who's-Who' history book and has been the setting for many famous movies.

Depending on our interests, we may take advantage of quaint shops, cafes and galleries within easy walking distance along Orange Avenue, or they may decide to stroll along the sandy beach, the best seashell beach in San Diego. The final stop will be the picturesque Coronado Ferry Landing full of boutique stores ready to explore. Exploring the island is a relaxing way to spend an afternoon. Coronado is filled with more than 100 years of history, romance and charm.



GASLAMP QUARTER PUB CRAWL

7:00 -10:00 PM

Preregistration \$25/Onsite \$35

There's no better way to check out the "Historic Heart of San Diego" than with our Pub Crawl. The Gaslamp Quarter, with its countless restaurants, shops and lively nightspots, is in the heart of downtown. This historical neighborhood is a very unique and vibrant part of San Diego, and has seen a great resurgence over the past decade. The center of this area runs along 5th Avenue, but the Gaslamp Quarter covers 16 square blocks of shops, restaurants, and some of San Diego's favorite watering holes. There will be a variety of locations to visit, whether you decide to stick with the established path, or give it a go on your own.

The Crawl will have a designated final location, where everyone can catch up in case you have stayed behind or randomly drifted off course. Cost includes a map, T-shirt, Passport book of coupons, and Trolley tickets.

Thursday, July 24

THE FRUIT OF THE VINE - SOUTHERN CALIFORNIA WINE COUNTRY

8:30 AM - 2:30 PM

Preregistration \$81/Onsite \$91

Temecula Valley is Southern California's celebrated Wine Country. Vistas of rolling hills are covered with uniquely designed wineries and vineyards. The blend of cool summer nights and a gap in the coastal mountain range allows the breezes from the Pacific Ocean to flow into the valley, creating a climate similar to the wine regions of Southern France.

This excursion will include a tour at one winery and tasting at two wineries. Wineries selected may include: Callaway Vineyard and Winery, the region's largest and most modern premium wine producer; Thornton Winery, whose sparkling wine was chosen as one of the 1988 Presidential Inaugural champagnes; Mt. Palomar Winery, which produces a cream sherry in the old Spanish tradition; Cilurzo Winery, grower of Petite Sirah grapes; and Maurice Carrie Winery, producer of 14 different varietals. You'll enjoy samplings of California's award-winning wines at these 'boutique' wineries, each featuring their unique specialties.

This Event Includes exclusive, roundtrip transportation via deluxe motor vehicle, souvenir wine glass from each of the tasting wineries, and a box lunch.

Technical Tours....Technical Tours....Technical Tours....Technical Tours

Monday, July 21

TECHNICAL TOUR SAN DIEGO GAMMA KNIFE CENTER TOUR

3:00 - 5:00 PM

Preregistration \$18/ Onsite \$22

Gamma Knife Radiosurgery at the San Diego Gamma Knife Center - opened as a center of excellence in October 1994. The Center treats patients with brain tumors, AVMs, acoustic neuromas, essential tremors, trigeminal neuralgia and many other brain disorders. Epilepsy patients with seizures uncontrolled by medication now have a non-invasive alternative to brain surgery, with finely focused beams of radiation replacing the surgeon's knife. Not really a knife at all, the Gamma Knife is a medical instrument that emits 201 finely focused beams of radiation that simultaneously intersect at the precise location of a brain disorder. Source activity consists of 201 cobalt-60 sources with an average activity of about 30 Ci each and a total activity of 6392 Curies.

Tuesday, July 22

DIII-D NATIONAL FUSION FACILITY AT GENERAL ATOMICS

1:00 - 4:00 PM

Preregistration \$18/ Onsite \$22

The DIII-D tokamak, one of the world's premier magnetic fusion experiments, is operated by General Atomics for the Department of Energy. Over the past three decades, the GA fusion research program has been a major contributor to the significant progress in the development of fusion energy science. DIII-D work has increased understanding and predictability of high-temperature reactor plasma regimes, advanced fusion technology, and helped refine magnetic fusion power plant concepts. Over 60 laboratories, universities, and industries collaborate at DIII-D. The facility tour will be followed by light refreshments. Those under 18 years of age, pregnant, or with pacemakers are not allowed.

Wednesday, July 23

SAIC MOBILE VACIS

10:00 AM - Noon, 2:00 - 4:00 PM

FREE

On Site Demonstration

The Mobile Vehicle and Cargo Inspection System (Mobile VACIS™) is a truck-mounted gamma-ray imaging system designed to non-intrusively inspect the contents of trucks, containers, cargo and passenger vehicles for explosive devices and/or contraband. Mobile VACIS offers a quick set-up time of approximately 10 minutes. The scanning of a 40 ft. container can be accomplished in less than 10 seconds, with average cycle times of 1 to 3 minutes per container. Mobile VACIS scanning can be performed with either a stationary or moving object. The gamma image and a video image of the target vehicle are then stored in the on-board computer for further review and analysis. The Mobile VACIS utilizes gamma-rays versus x-rays, which allows for an overall lower cost, smaller operating space, and safer operation. Object penetration is approximately 6.0 inches of steel. Since September 11th, the VACIS units also have become an important part of the homeland defense infrastructure.

FAMILY ACTIVITIES

So many things to do and so little time...

AMUSEMENT PARKS

Efforts have been made to ensure the accuracy of this information, however, please contact the facility directly for details and ticket purchasing instructions. Tax not included in ticket costs.

SAN DIEGO ZOO

2920 Zoo Drive, CA, 92101
(619) 231-1515

Hours of operation: 10 AM - Dusk

(Hours vary seasonally. Summer night hours too.)

Adults (ages 12 and up)

Children (ages 3-11)

www.sandiegozoo.org/

Reg. \$19.50 / \$32.00*

Reg. \$11.75 / \$19.75*

Among the 4,000 animals representing 800 species are some of the most rare wildlife in the world, including koalas and giant pandas (and the only panda cub in the U.S.).

* Deluxe admission includes guided 40-minute Bus Tour and Skyfari Aerial Tram ride

SEA WORLD

500 SeaWorld Drive, CA 92109
(619) 226-3901

Hours of operation: 9 AM - 11 PM

Adults (Ages 10 and up)

Children (Ages 3-9)

www.seaworld.com

\$44.95

\$34.95

Exciting adventures, amazing animals, wild water rides, and wondrous shows! Sea lions, otters, walruses, polar bears, and seals entertain you. And of course, Shamu!

WILD ANIMAL PARK

15500 San Pasqual Valley Road, CA, 92027
(760) 747-8702

Hours of operation: 9 AM - DUSK

(Hours vary seasonally)

Adults (ages 12 and up)

Children (ages 3-11)

www.wildanimalpark.org

\$26.50

\$19.50

Experience a unique adventure at the 2,100-acre preserve where animals wander freely in surroundings much like their native homelands. Truly a zoo unlike traditional zoos.

LEGOLAND

1 LEGOLAND Drive, CA, 92008
(858) 710-8500

Hours of operation: 10 AM - 8 PM

\$4 discount tickets will be available at the HPS Registration Desk

Adults (Ages 13 and up)

Children (Ages 3-12)

www.legoland.com

\$41.95

\$34.95

It's a land of surprise around every colorful corner, astonishingly accurate LEGO® brick models and a chance to let everyone's imagination run free. LEGOLAND puts the "fun" in family trips with something geared towards every family member, and dozens of things to enjoy together.

DISNEYLAND and

DISNEY'S CALIFORNIA ADVENTURE

Anaheim, CA 92803-3232
(714) 781-4400

Hours of operation: 10 AM - 8 PM

Hours of operation: 10 AM - 6 PM

Adults (Ages 10 and up)

Children (Ages 3-9)

www.disneyland.com

(Hours vary seasonally)

\$47.00

\$37.00

The original "Happiest Place on Earth" is an enchanted kingdom of fantasy and imagination filled with classic family-friendly attractions and magical entertainment, dining and shopping.

Disney's California Adventure™ park takes you and your family on a magical journey to experience the breathtaking wonder, laid-back fun and adventures that only Disney could create.

NOTE: Anaheim is 1-2 hours away by car depending on traffic conditions.

BELMONT PARK

3146 Mission Blvd., San Diego, CA
(619) 491-2988

Hours of operation: 11am-10pm

Pay per ride or game

www.giantdipper.com/

A seaside carnival complete with arcade games and a beachfront boardwalk. The perfect spot to ride a rollercoaster and act like kids again.

BEACHES, BAYS, AND MARINAS

This is what makes San Diego so appealing. 70 miles of beaches give you a lot to choose from. Depending on your goal, you're sure to find the waterfront perfect for you. Choose from wave riding, surfing, sunning, diving, sailing and more. Here's a guide to our beaches. http://sandiego.citysearch.com/feature/42/?cslink=cs_hotels_visitors_1_4

A few of our favorites:

Wave Riding at Mission Bay Park <http://www.aboutmissionbay.com/>

The many coves, beaches and grassy areas that make up this vast aquatic park provide ideal spots for sailing, water-skiing, jet skiing, softball, volleyball, picnicking, jogging and biking.

Surfing at Windansea <http://www.wbsurfing.com/index.html>

Surfers consider this a prime spot, as do sunbathers and sunset watchers who lounge on the beach's huge, smooth sandstone rocks. Windansea is also home to a legendary - almost mythic - surf culture, and perhaps California's first surfing icon, a Polynesian-style sideless hut that was first built by pioneer Windansea surfers in 1947.

Scuba Diving at La Jolla Underwater Park <http://www.scubasandiego.com/>

As a look-but-don't-touch 6000 acre ecological refuge, with two artificial reefs teeming with marine life, the park is an ecological wonder and has become a required destination for snorklers and scuba divers.

Sun Worshipping at Pacific Beach and Mission Beach

This coastal community undoubtedly holds the title for the most popular coastal spots to see and be seen, to Rollerblade or jog or bicycle, to see and be seen, to surf, to tan or burn, to watch a sunset, and to see and be seen . . . you get the point. Stroll down Crystal Pier or the boardwalk. Stop for refreshment at any of the breezy restaurants and watering holes along the way.

PARKS

Balboa Park <http://www.balboapark.org/>

Chosen by locals as the best all-around outdoor destination in San Diego, this park is the home to not only the world famous San Diego Zoo but also Twilight in the Park, the San Diego Museum of Art summer film festival, 15 museums, a golf course, and various gardens, hiking and biking trails, recreational facilities, and restaurants.

Birch Aquarium/ <http://aquarium.ucsd.edu/index.cfm>

Scripps Institute of Oceanography

The Stephen Birch Aquarium, dedicated to increasing public understanding of the oceans, has three main display areas, the 33-tank Hall of Fishes, the Hall of Oceanography and the demonstration tide pool in the plaza

Cabrillo National Monument <Http://www.nps.gov/cabr/>

Part military base, part national park, Cabrillo boasts one of the choicest views in all of San Diego. The west side of Point Loma offers stupendous tide-pooling. You and your kids will quickly lose yourselves exploring water-filled crevices in flat reefs extending far out into the ocean. Cabrillo Monument has ranger-guided tide-pool walks at most low tides.

Presidio Park <http://sandiego.citysearch.com/profile/91607/>

Walk through this park and you walk through San Diego's history. The Junipero Serra Museum commemorates the site where Father Serra and Captain Portola established California's first mission in 1769.

San Diego Maritime Museum <http://www.sdmaritime.com/>

See the world's oldest active sailing ship. The 1863 tall ship *Star of India* and the 1898 Steamship *Berkeley* are State Historic Landmarks AND National Historic Landmarks. The elegance and uniqueness of these vessels is breathtaking to behold.

Seaport Village <http://www.spvillage.com/>

Cobbled walkways meander over ponds and streams and create a sense of flow between quaint little shops and restaurants. Situated only a few yards from the bay, the temperature is always pleasant and there is a nearby park if you want to picnic.

Torrey Pines State Reserve <http://www.torreypine.org/>

This reserve encompasses 2000 acres of land as they were before San Diego was ever developed. 8 miles of trails, a visitor center, and guided nature walks accentuate the rare and elegant Torrey Pine trees, unspoiled beaches, and a lagoon that is vital to migrating seabirds.

RECREATION

Ballooning

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

A late afternoon sunset flight over the Del Mar/San Diego coastline is truly one of the most enjoyable experiences one could ever imagine. You will view the magnificent estates, impeccably maintained golf courses, the shoreline, and the Mt. Palomar observatory.

Fishing

<http://www.sdhookandline.com/aboutsd.html>

San Diego is well known for its bounty of ocean sport fishing but also has plenty of fresh water fishing as well. From a few hours on the water to full-on fishing charters, here are a couple of links to San Diego-based companies that can take you to all the hot spots.

Golfing

<http://www.signonsandiego.com/sports/golfguide/>

A true golf enthusiast may want to challenge oneself as PGA tour professionals do at either La Costa (home of the Accenture Match Play Championships) or Torrey Pines (future site of the US Open and home to the Buick Invitational).

Horse Racing at the Del Mar Thoroughbred Club

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

Opening day is Wednesday 7/23 where the surf meets the turf.

Padre's Baseball at the Q

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

Arizona Diamondbacks 7/17-7/20

St. Louis Cardinals 7/21-7/23

Just a short trolley ride away from the Town and Country Resort, this is the last season the Padres will be playing at Qualcomm stadium before moving into the new PETCO park next year.

Torrey Pines Gliderport

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

Located on the scenic bluffs overlooking Black's Beach and the Pacific Ocean, the Torrey Pines International Gliderport serves as a recreational spot and teaching facility for paragliders and hanglider enthusiasts.

Women's Professional Soccer at USD <http://sandiegospirit.com/>

The San Diego Spirit hosts the New York Power, Wednesday, 7/23. Get your tickets early because this small venue often sells out.

ARTS

For information concerning Performing Arts in San Diego, check out the following web pages closer to July. Full Summer schedules not yet available.

San Diego Art + Sol

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

Broadway San Diego

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

San Diego Opera

<http://www.sdogera.org/>

San Diego Downtown Partnership

http://www.dtsd.org/evt_arts.asp

What's Playing on Stage in San Diego

http://www.sandiegoperforms.com/whats_playing/whats_playing.html

COMMUNITIES OF INTEREST IN AND AROUND SAN DIEGO

Coronado

<http://www.coronado.ca.us/>

The Gas Lamp Quarter

<http://www.gaslamp.org/>

La Jolla

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

Little Italy

<http://www.littleitalysd.com/History.asp>

Old Town

<http://gothere.com/sandiego/oldtown/>

Tijuana, Mexico

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

SAN DIEGO VISITOR INFORMATION CENTER

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

2688 East Mission Bay Drive

San Diego, CA 92109

(619) 276-2071; (619) 276-6041 fax

SAN DIEGO CONVENTION AND VISITORS BUREAU

<http://www.sandiego.org/>

TRAVEL ARRANGEMENTS

CAR RENTAL INFORMATION

Hertz is providing meeting attendees with the following discounted group rates, available from July 14-19, 2003

	<i>Per day</i>	<i>Per week</i>
Economy	\$38.99	\$144.99
Compact	\$44.99	\$159.99
Midsized	\$47.99	\$185.99
Full size (4dr)	\$53.99	\$208.99
Minivan	\$63.99	\$304.99
4 Wheel Drive	\$63.99	\$304.99
Convertible	\$63.99	\$304.99

To book a car call **Hertz** at 1-800-654-2240. Request **Meeting CV#02460017** for special rates.

AIRLINE INFORMATION

Special rates have been arranged for the HPS meeting with Southwest and American Airlines:

Southwest Airlines

Available July 14-29

Up to 10% off most fares

Call 1.800.433.5368, Reference ID: X0212

Monday-Friday 7:00 am-8:00 pm, CDT

Saturday-Sunday 8:30 am-5:30 pm, CDT

American Airlines

Be sure to make your reservations early!

American is offering special zone fares, as well as, 5% discounts on applicable advance purchase fares. Contact American Airlines for specific details. Discounts are valid 5 days before and 5 days after the meeting dates.

To obtain the convention discount, you or your travel agent must call the **American Airlines Meeting Services desk at (800) 433-1790. Reference ID: 8173AV**

CURRENT EVENTS/WORKS-IN-PROGRESS

The submission form for the Current Events/Works-in-Progress poster session is on the Health Physics Society web site, www.hps.org under the Conferences section. The deadline for submissions is **Friday, June 6, 2003**. All presentations will take place as posters on Monday, July 21 between 1:30-3 pm. Individuals will be notified of acceptance of their WIP submissions in late June.

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

BE A MENTOR

The HPS will once again have a Mentoring Program at the Annual Meeting. This program is designed to help students and first time attendees (FTA) feel more a part of the HPS family. This program will pair students and FTA with members who have been around the HPS block, so information can be passed on to the new generation. The mentor will be able to show the mentee around the meeting, share the advantages of joining HPS, introduce them to other members, and share how HPS works and what we are all about. This does not mean the member has to spend all of their time with the mentee, but if there are meetings you think that would interest them, invite the mentee to the meeting so they will see how HPS works from the inside. This is designed for the mentor to be a meeting liaison for the student and FTA in order for them to feel welcomed into the HPS arena, rather than wondering about not knowing anyone. Sign up to be a mentor (or request a mentor) on your registration form.

Placement Information

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

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

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

For a résumé form, contact:

Mike Johnson
HPS Headquarters
1313 Dolley Madison Blvd., Suite 402
McLean VA, 22101
email: MJohnson@BurkInc.com

These forms must be sent no later than **June 27, 2003**. Once these forms are received, a résumé number will be issued and inserted on side one and two. By July 3, 2003, a résumé number will be assigned to all résumé forms and a photocopy of side two (with the résumé number) will be sent back to you. Please remember what résumé number has been assigned to you. A photocopy of side one will be posted at the meeting. The original résumé form will be kept in a book, strictly confidential, for six months after the meeting and then destroyed.

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

Wednesday Workshop

6:30 - 7:30 pm

Radiological Emergency Medical Management - Train the Trainer Workshop. *Jerrold T. Bushberg, Radiological Emergency Medical Preparedness & Management Subcommittee of the HPS Homeland Security Committee*

The subcommittee has prepared a 45 minute Power Point presentation which will be provided to HPS Chapters for their use as the basis of a training program for hospital emergency department staff. It will be provided on CD to be distributed to the chapters and will include talking points. The presentation will be reviewed with attendees.

The presentation provides information on radiation and the handling of patients who are injured and may be irradiated and/or contaminated with radioactive material. The training emphasizes the priority of medical management of traumatic injuries over concern with radiation related issues. It advises that universal precautions will provide adequate protection to the staff while they tend to the medical stabilization of the patients. Its goal is to raise the comfort level and lower the level of anxiety of emergency department staff who must deal with these types of patients. Educating medical staff on the actual magnitude of the radiological hazards will allow them to promptly and confidently provide patient care without undue concern for their own safety or ED facility contamination. The presentation materials are in conformity with NCRP Report 138 and other relevant contemporary guidance.

19th BIENNIAL CAMPUS RADIATION SAFETY OFFICERS (CRSO) MEETING

GREETINGS FELLOW RSOs!

We along with our RSO colleagues at the ten campuses of the University of California would like to invite you to the 2003 - 19th Biennial *CAMPUS RADIATION SAFETY OFFICERS MEETING* held in conjunction with the HPS 48th Annual Meeting (American Conference of Radiological Safety).

The Campus Radiation Safety Officers (CRSO) Meeting will be held on July 23 and 24 in San Diego at the Town and Country Hotel and Conference Center.

ABOUT CRSO

The CRSO is a non-profit organization that is composed of university and hospital radiation safety officers from Canada and the United States. The goals of this organization are to give campus radiation safety professionals the opportunity to share their experience and expertise by presenting frank, practical, and effective solutions to the ever-changing problems encountered in institutional radiation safety program.

This collaboration provides an exciting opportunity for campus radiation safety professionals to take advantage of the rich professional development and research presentations provided by the HPS society while collaborating with their peers at the CRSO conference. The HPS summer school topic of University Health Physics also provides a perfect compliment to the CRSO conference. In addition to workshops, lectures, and break out sections, CRSO registration will give attendees access to the HPS conference exhibitor and poster booths and to the always popular CRSO Night Out which this year will be held at the world famous San Diego Zoo.

The 2003 CRSO meeting will provide an exciting opportunity for radiation safety professionals who work in an academic, medical, or bio-tech setting to come together to further the practice of applied health physics. The University of California and the Campus Radiation Safety Officers look forward to welcoming you to sunny San Diego for this great opportunity for professional development.

CONFERENCE REGISTRATION

Please refer to the CRSO web site: www.crso.org for additional information and a schedule of speakers in the coming months.

As a result of this year's collaboration with the Health Physics Society, CRSO attendees will have access to the same discounted hotel, car, and flight discounts as HPS attendees. They can also use the HPS roommate referral service in order to reduce lodging costs. The cost for attending the 2 and ½ day

event is \$140 pre-registration this includes the Night-Out Dinner at the Zoo. Individuals that register for both the HPS meeting and the CRSO receive a \$50 discount on their total price. Please use the enclosed HPS/CRSO registration form and register early as there is a savings in the pre-registration price.

CRSO NIGHT-OUT DINNER at the ZOO

This year we are proud to announce that our annual CRSO Night Out will be held at the world famous San Diego Zoo, long recognized as one of the city's most treasured landmarks.

The CRSO Night Out will include an exclusive twilight bus tour of the zoo. For a private, relaxing experience, it's hard to top the Zoo's Twilight Tour. At sunset, the nocturnal animals who've been napping all day are waking. The Twilight Tour consists of a three-mile guided bus tour with plenty of insider information and entertaining anecdotes.

After our tour we will enjoy a delicious buffet dinner in the Zoos Zoofari Party Area, then explore the zoo until closing.

Depart Town and Country 5:30 pm
Arrive at the San Diego Zoo 5:45 pm
Bus Tour of Zoo at Sunset. 5:45 pm
A feast to soothe the savage beast 7:00 pm
Nighttime Zoo 7:00 pm – 10:00 pm
Depart the San Diego Zoo 10:00 pm
through the main exit.
Bus leaves 10:05 pm

Additional Night-out tickets can be purchased in advanced or at the door.

	Pre-registered	Late-Registration
Adult	\$65	\$75
Child (3-11)	\$40	\$45
Child (<3)	Free	Free

PLEASE INVITE YOUR COLLEAGUES

Please help us advertise the CRSO meeting by passing on this invitation to any of your colleagues who might be interested in attending.

If you have any questions or are interested in presenting please contact Ken Smith at ksmith@ucsc.edu or call 831-459-3911. We are looking forward to seeing many of you in sunny San Diego.

On behalf of the U.C. RSOs
Ken Smith, RSO UC Santa Cruz
On behalf of CRSO
Ninni Jacob, President CRSO

48th Annual Meeting of the Health Physics Society

San Diego, California, July 20-24 - Preliminary Scientific Program

Monday

7:15 - 8:15 AM

CEL-1

Room: Pacific 1

The Susceptibility of the Preimplantation, Preorganogenic Embryo to the Abortigenic and Teratogenic Effects of Environmental Toxicants; A Reanalysis of the "All or None Period." *R. Brent, Pediatric Department, duPont Hospital for Children*

7:15 - 8:15 AM

CEL-2

Room: Pacific 2

Current Issues in Radiation Epidemiology. *J.D. Boice, Jr.; Vanderbilt University Medical Center*

8:30 - 11:30 am

Golden Ballroom

MAM-A: Plenary Session

Chair: John Frazier

8:30 AM

Welcome to San Diego. *J. Frazier; President; Health Physics Society and Local Arrangements Committee*

8:45 AM

Introduction of Landauer and Morgan Lecturers. *R. Vetter; Mayo Clinic*

9:00 AM

MAM-A.1

An Integrated Strategy for Securing High-Risk Radioactive Sources. *C.D. Ferguson; Monterey Institute's Center for Nonproliferation Studies (Robert S. Landauer, Sr. Lecture)*

9:30 AM

MAM-A.2

U.S. Congress Paper TBD. *U.S. Congressman*

10:00 AM

BREAK

10:30 AM

MAM-A.3

The Threat of Orphan Radioactive Sources: An International Perspective. *A.J. González; IAEA (G. William Morgan Lecture)*

11:00 AM

MAM-A.4

Nuclear Regulatory Commission Staff Perspective on Lost, Orphan and Unwanted Sources. *C.J. Paperiello; US Nuclear Regulatory Commission*

1:30 - 3:00 pm

Poster Session

MISCELLANEOUS

P.1 2002 Review of Neutron and Non-Neutron Nuclear Data. *N.E. Holden, J.P. Hu, R.N. Reciniello, D.C. Rorer; Brookhaven National Lab*

P.2 Graduate Studies in Radiochemistry at Colorado State University. *S.A. Ibrahim; Colorado State University*

P.3 The University of Michigan Student Health Physics Society's Radiation and Health Physics World Wide Web Site. *J.G. Dreyer, W.G. West, D.A. Granzow, R.B. Gunnnett, A.F. Kalchik, K.J. Kearfott; University of Michigan*

P.4 Managing Data Quality for the NIOSH Claims Tracking System. *L.S. Rafales, N. Kuo, P.W. Wallace, J.V. Wierowski, D.G. Schuster; Advanced Technologies Laboratories International, Inc., National Institute for Occupational Safety and Health, Oak Ridge Associated Universities, Inc., MJW Corporation Inc.*

ACCELERATOR HEALTH PHYSICS

P.5 Bremsstrahlung Calculations at CAMD's Site Boundary. *M.L. Day; Louisiana State University*

P.6 Characterization of BLIP Gaseous Effluent Releases. *S. Sengupta, J. Klemish, B. Hooda, G.R. Holeman, H. Kahnhauser; Brookhaven National Laboratory, Holeman Consultants, Inc.*

BIOEFFECTS

P.7 Revisit of the Compound Dual Radiation Action Theory. *C.K. Wang, X. Zhang, M. Seivaliev; Georgia Institute of Technology*

P.8 Environmental Radon, High Energy Alpha Particle Radiation, and Multiple Sclerosis Connection Revisited. *G.I. Lykken, B. Momcilovic; University of North Dakota, Med. Res. Occup. Hlth*

P.9 Cardiovascular Mortality Rate in Rocky Mountain States and Gulf Coast States of the USA. *P. Duport, A. Trivedi; University of Ottawa, Canada, Atomic Energy of Canada Ltd, Health Canada*

P.10 Investigation of the Dose Rate Response of the T4 Bacteriophage in Aqueous Suspensions. *C. Campbell, R.R. Brey, L. Farrell, F.J. Harmon, T.F. Gesell; Idaho State University*

P.11 Radiation Damage to DNA Plasmid. *A.C. Rabon, D.T. Miller, T.E. Shannon, D.W. Jokisch; Francis Marion University*

Monday

DECOMMISSIONING

P.12 Assessment of Organ Doses and Radiation Activation at an Electron Accelerator. *A. Al-Ghamdi, C.H. Kim, X.G. Xu; Rensselaer Polytechnic Institute*

P.13 Applying Continuous Improvement Process Management to Radiological Protection Activities for Environmental Restoration Activities. *J.W. DeMers; Bechtel Hanford, Inc.*

EMERGENCY PLANNING/RESPONSE

P.14 The Department of Energy's Radiological Assistance Program. *B.B. Buddemeier, M.C. Cornell; Lawrence Livermore National Laboratory, US Department of Energy*

P.15 Radiological Dispersal Devices: A Comparative Study from Detonation to Aftermath. *T.L. West; University of Missouri - Rolla*

P.16 Hospital Communications in a Mass Casualty Radiological Event. *C.W. Miller, M. Spano, M.L. Vanderford, C. McCurley, R.C. Whitcomb, Jr.; Centers for Disease Control and Prevention*

P.17 The Canadian Government's Response to 911, and it's Affect on the Human Monitoring Laboratory. *G.H. Kramer; Health Canada*

P.18 Potential Transboundary Impacts of Accidents at Russian Pacific Fleet Facilities. *K. Compton, K. Brown, A. Mahura, F. Parker, V. Novikov, Y. Sivintsev; International Institute for Applied Systems Analysis, Danish Meteorological Institute, Vanderbilt University, Russian Research Center-"Kurchatov Institute"*

P.19 Preliminary Investigations into Vulnerabilities of Spent Nuclear Fuel. *S.P. Bush-Goddard; US Nuclear Regulatory Commission*

ENVIRONMENTAL

P.20 Uranium-Glazed Tiles in Older Houses and Apartments. *W.L. Wagner; Monterey Bay Perpetual Endowment Foundation for Wellness*

P.21 Field Measurements of Wind and Water Transport for Contaminant Mobility: Comparisons and Contrasts among Semiarid Grassland, Shrubland, and Forest Ecosystems. *D.D. Breshears, J.J. Whicker, M.P. Johansen, J.E. Pinder III; Los Alamos National Laboratory, Colorado State University, US Department of Energy*

P.22 Radionuclides in Fish Downstream of Los Alamos National Laboratory after the Cerro Grande Fire. *P.R. Fresquez, L. Soholt, K. Bennett, G.J. Gonzales; Los Alamos National Laboratory*

P.23 Migration Parameters of Depleted Uranium from Military Ordnance on Arid Soils. *H. Brogonia, W.H. Johnson, B.J. Buck, A.L. Brock, C. Riland, M.J. Rudin; University of Nevada Las Vegas, Bechtel Nevada*

P.24 Solubility Limitations on the Vadose Zone Migration of Depleted Uranium in Arid Soils. *W.H. Johnson, B.J. Buck, A.L. Brock, H. Brogonia; University of Nevada Las Vegas*

P.25 Experimental Studies of Uranium and Neptunium Adsorption on Interbed Material from the Snake River Plain. *H.E. Holder, R.A. Fjeld, J.T. Coates, B.A. Powell; Clemson University*

P.26 Adsorption of Plutonium (IV) and (V) to Sediments from the Savannah River Site. *D.L. Reid, R.A. Fjeld, B.A. Powell, D.I. Kaplan; Clemson University, Savannah River Site*

P.27 Radioactivity in Soil in Selected Regions of Central Saudi Arabia. *W.H. Abulfaraj; King Abdulaziz University, Saudi Arabia*

P.28 Comparisons of ISDMAP Estimates of ¹³⁷Cs Distributions with the Use of In Situ Data from Empirical and Generic Detector Characterizations. *L. Tkavadze, R.R. Brey, T.F. Gesell; Idaho State University*

P.29 In-Situ Depth Profiling of ¹³⁷Cs Contamination in Soils as the Idaho National Engineering and Environmental Laboratory. *C.P. Oertel, J.R. Giles, R.P. Wells, K.C. Thompson; Idaho National Engineering and Environmental Laboratory*

P.30 Qualification of Ventilation Exhauster Unit. *J.E. Hawk, R.R. Brey, J.L. Alvarez, J. Schutte, T.F. Gesell; Idaho State University, Auxier and Associates Inc., Premier Technology, Inc.*

P.31 Computational Model to Predict Size-Specific Aerosol Transport in Space and Time. *E. Sajo, H. Park; Louisiana State University*

P.32 Simulation of Single Species Aerosol Coagulation and Deposition Using the Sectional Method with Arbitrary Size Boundaries. *E. Sajo, H. Park; Louisiana State University*

P.33 ERMYN: Environmental Radiation Model for the Yucca Mountain, Nevada. *D.W. Wu, M.A. Wasiolek, J.J. Tappen, K.R. Rautenstrauch, A.J. Smith; Bechtel SAIC Company LLC, Framatome ANP*

P.34 Radionuclide Transport Via Evaporative Coolers and Associated Exposure Pathways. *M.A. Wasiolek, D.W. Wu; Bechtel SAIC Company, LLC*

P.35 Evaluation of Single Well Push Pull Tests Using Radiotracer Techniques and a Bench-Top Model Aquifer. *W.L. Boyd, R.R. Brey, R. Starr; Idaho State University, North Wind, Inc.*

P.36 Investigation of Optimal PCB Radiolysis Using Alkaline Isopropanol. *A. Arndt, R.R. Brey, R. Rodriguez, B. Mincher; Idaho State University, Idaho National Engineering and Environmental Laboratory*

Monday

P.37 ¹²⁹I in Deer Thyroids as a Fiducial for ¹³¹I Dose Reconstruction. *J.L. Alvarez, H.M. Prichard, J.A. Auxier; Auxier & Associates, Inc.*

EXTERNAL DOSIMETRY

P.38 Simple Design of a Moving Mechanical Collimator for Temporally Varying Exposure of Thermoluminescent Dosimeters (TLDs) over a 14-Day Period. *R.B. Gunnett, K.J. Kearfott, B.P. Warner, C.P. Henley, W.G. West, S.M. Bernal; University of Michigan*

P.39 Radiation Dosimetry at BNL's Medical Research Reactor. *N.E. Holden, J.P. Hu, R.N. Reciniello, D.C. Rorer; Brookhaven National Lab*

P.40 Radiation Dosimetry of a Graphite Moderated Radium-Beryllium Source. *N.E. Holden, J.P. Hu, R.N. Reciniello, D.C. Rorer; Brookhaven National Lab*

P.41 The Korean Reference Adult Male Voxel Model "Kрман" Segmented from Whole-Body MR Data and Dose Conversion Coefficients. *C. Lee, J. Lee; Hanyang University, Seoul*

P.42 Simulation of Neutron and Photon Response of a TLD-albedo Personal Dosimeter on a ISO Slab Phantom. *Z. Wang, N.E. Hertel; Georgia Institute of Technology*

P.43 Los Alamos National Laboratory Unique Case Studies Involving Monitoring for External Dose. *B.B. Bates, T. Buhl, J. Hoffman; Los Alamos National Laboratory*

P.44 A Desktop OSL System for On-site Dosimeter Processing. *R. Fard, R. Hannify; Landauer*

P.45 Construction of MIRD-Type Korean Reference Adult Male and Female Phantoms. *S. Park, C. Lee, J. Lee; Hanyang University*

P.46 Dose Response of Thermoluminescence in Tooth Enamel. *M. Balzer, R. Brey, T. Gesell; Idaho State University*

P.47 Size Effect of Enamel to Electron Paramagnetic Resonance Spectrum for Retrospective Dosimetry. *D.S. Hong, K.J. Lee; Korea Advanced Institute of Science and Technology*

P.48 Method of Estimating Effective Dose Equivalent Using Multiple Dosimeters Using HPS N13.41-1997. *M.J. Russell; Southern California Edison*

P.49 Advanced Neutron Irradiation System for Radiation Biology. *S.Y. Jang, C.H. Kim, W.D. Reece, L.A. Braby; Texas A&M University, Rensselaer Polytechnic Institute*

INSTRUMENTATION

P.50 A New Method to Discriminate Radon and Thoron Progeny on Filter Samples. *S.P. Webb; Canberra Industries*

P.51 Compensating for Radon and Thoron by Adaptive Spectrometry in an Alpha and Beta Air Monitor. *D. Ryden; Canberra Harwell Ltd., United Kingdom*

P.52 A Fiber-Dosimetry Method Based on OSL from Al₂O₃ for Radiotherapy Applications. *A. Akselrod, M.S. Akselrod, R. Gaza, S.W.S. McKeever, T. Underwood, C. Yoder, J. Polf; Landauer Inc., Oklahoma State University*

P.53 X-Ray Exposure Measurement Using Electret Ion Chamber. *G.R. Redmond; National Institutes of Health*

P.54 Quantification of Quench on Alpha/Beta Pulse Shape Discrimination of Liquid Scintillation Cocktails. *C.D. Theisen, T.A. DeVol, D.P. DiPrete; Clemson University, SRTC*

P.55 Comparison of Calibration Light Sources for use in a Commercial TLD Reader. *M.E. Nelson, J.H. Dormo, R.B. Jenkins, T.J. St. John; US Naval Academy, Naval Dosimetry Center*

P.56 Scintillation Beta Dosimetry and Spectroscopy Utilizing a Large Area Avalanche Photodiode. *A.A. Kriss, D.M. Hamby; Oregon State University*

P.57 Commissioning the New Health Physics Instrumentation Laboratory at the INEEL. *B.H. Christiansen; Bechtel BWXT Idaho*

P.58 Measuring the Time of Origin of Fission Events Using Xenon Isotopes. *W.R. Schell, R.A. Fjeld, T.A. Devol, J. Vives Batlle, S.R. Yoon, M.J. Tobin; University of Pittsburgh, Clemson University*

P.59 Radioactive Source Locator. *B.J. Kovach; NUCON-International*

P.60 The Biggest Count Error. *E.T. Bramlitt*

INTERNAL DOSIMETRY/BIOASSAY

P.61 Brookhaven Technical Basis Document for the Internal Dosimetry Program. *C. Sun, R. Reciniello, R. Sengupta, L. Michel; Brookhaven National Laboratory*

P.62 Program Improvements Through Retrospective Bioassay Sampling. *M.D. Matheny, T.R. LaBone, W.M. Findley, H.P. Preister; WSRC*

P.63 Risk Assessment of Airborne Particulates to Workers in the Phosphate Industry. *K.P. Kim, W. Bolch, E. Bolch, C.Y. Wu, W. Nall, B. Birky; University of Florida, Polk County Public Health Unit, Florida Institute of Phosphate Research*

Monday

P.64 Influence of Age, Gender, and Exertion Level on Dose Uncertainties Associated with Inhalation of Weapons-Grade Plutonium Oxide. *E.B. Farfan, T.E. Huston, W.E. Bolch, E. Han, K. Beharry, Z.M. Jupiter; South Carolina State University, University of Arkansas for Medical Sciences, University of Florida*

P.65 Influences in Mucosa Wall Thickness Variations on the Dosimetry of the Stomach and Rectum. *C. Huh, W.E. Bolch, M.S. Bhutani, E. Bolch; University of Florida*

INTERNATIONAL RELATIONS COMMITTEE

P.66 Laboratory Assessment of Paint Coatings as Barriers to Indoor Radon Contamination. *K.G. Ioannides, C.A. Papachristodoulou, K.C. Stamoulis; The University of Ioannina*

P.67 Can Practical ALARP be Taught to High Frequency/Low Dose Workers Like Laboratory Researchers or Dentists? *R.M. Guest; Suffolk Radiation Technical Services Ltd.*

P.68 Development of Skeletal Substitute Materials. *S. Kinase, M. Kimura, H. Noguchi; Japan Atomic Energy Research Institute, Kyoto Kagaku Co., Ltd*

P.69 A Numerical Method for the Calibration of a Whole Body Counter. Application to In Vivo Measurements of ^{241}Am in Skull. *J.M. Gómez-Ros, M. Moraleda, M.A. López, T. Navarro, J.F. Navarro; CIEMAT*

P.70 Spectroscopic Research of Influence of Low-Frequency Laser Radiation on Biological Fluids. *T. Shukurov, Z.N. Sochibova; Umarov Physics and Technical Institute, Avicena Tajik State Medical University*

P.71 Neutron Measurements around an 18 MV LINAC. *R. Barquero, R. Mendez, M.P. Iñiguez, H.R. Vega-Carrillo; Hospital Universitario Río Hortega Valladolid, Universidad Autónoma de Zacatecas*

P.72 Environmental Neutron Spectrum. *H.R. Vega-Carrillo, E. Manzanares-Acuña; Unidades Académicas de Estudios Nucleares, Universidad Autónoma de Zacatecas*

P.73 Dose Distribution of Head Measured by Imaging-Plates for External Photon Exposure. *T. Limoto, Y. Komiya, N. Sugiura, T. Kosako; The University of Tokyo*

P.74 Radiation Exposures to Miners in Polish Coal Mines. *J. Skowronek; Central Mining Institute*

P.75 Radon Risk and Lung and Larynx Cancers in Coal Mines in Upper Silesia. *J. Skowronek, B. Zemla; Central Mining Institute, Maria Skłodowska-Curie Memorial Institute*

P.76 Measurements of Radon Exhalation from Soil – Development of the Method and Preliminary Results. *S. Chalupnik, M. Wysocka; Central Mining Institute*

P.77 Relationship of Radon Level in Dwellings and Geological and Mining Conditions in Upper Silesia Region. *M. Wysocka, S. Chalupnik; Central Mining Institute*

P.78 The Beneficial Health Effects of Radiation Experienced in the Incident of the ^{60}Co Contaminated Apartments in Taiwan. *W.L. Chen, Y.C. Luan, T.S. Chou, C.M. Tsai, M.L. Shen; Nuclear Science & Technology Association, Nuclear, Biological and Chemical Protection Society, Atomic Technology Foundation, National Taiwan University*

P.79 A Brief Discourse on Exposure to Low Levels of Ionizing Radiation in Relation to the LNT Thesis and Hormesis. *R.M. Longden-Thurgood*

MEDICAL HEALTH PHYSICS

P.80 Launching a New Radioimmunotherapy Product - The Regulatory Experience and Implications. *R. Belanger, P. Pieslor; Ryan-Belanger Associates, IDEC Pharmaceuticals Corp.*

P.81 The Increasing Role of Radiation Health Physicist in Patient Safety. *R.J. Heath, G.T. Barnes, W.B. Bass, B.S. Brinkley, A.C. Coan, T.S. Rorrer; The University of Alabama at Birmingham*

P.82 Development of New Tissue-Equivalent Materials for Use in a Series of Pediatric Anthropomorphic Phantoms. *A.K. Jones, D.E. Hintenlang, W.E. Bolch; University of Florida*

P.83 Development of a Pregnant Woman Model from CT Data. *C.Y. Shi, X.G. Xu, C.H. Kim, K.M. Ogden, W. Huda, M.G. Stabin; Rensselaer Polytechnic Institute, SUNY Upstate Medical University, Vanderbilt University*

NON-IONIZING RADIATION

P.84 Static Magnetic Field Measurements in the Research Workplace. *S. Farmer, T.L. Mays; Eli Lilly*

OPERATIONAL HEALTH PHYSICS

P.85 Security of Radionuclides at a Major University Medical Center. *D.R. Anderson, T.S. Rorrer, J.R. Lalisian, M.A. Thompson, W.B. Bass, N.E. Bolus; University of Alabama at Birmingham*

P.86 Rules and Protocols for the Safe Use of Radiation Sources at King Abdulaziz University Hospital. *W.H. Abulfaraj; King Abdulaziz University*

P.87 Managing a Wide Range of Radiation Sources Worldwide: US Army Medical Command Radiation Safety Program. *C. Jones, B. Webb, M. Melanson, D. Alberth, E. Daxon; U.S. Army Center for Health Promotion and Preventive Medicine, Proponency Office for Preventive Medicine-San Antonio*

Monday

P.88 U.S. Army Ionizing Radiation Evaluations of Mobile Security Inspection Systems. *F. Szrom, C.R. Jones, R.G. Overturf, P.M. Moscato, M.A. Melanson, D.P. Alberth; U.S. Army Center for Health Promotion and Preventive Medicine, United States Army Soldier Biological and Chemical Command*

P.89 Radiological Control Profile for the DOE Office of Science Laboratories. *B. Parks; US Department of Energy Office of Science*

P.90 An Advanced Tool for Applied Integrated Safety Management. *T.T. Potts, J.M. Hylko, T.A. Douglas; WESKEM, LLC, Alliant Corporation*

P.91 Aligning Radiation Protection Procedures with Regulatory Requirements. *D.H. Denham; Bechtel Hanford, Inc.*

P.92 Automation of Radiation Instrument Tracking and Management. *W.J. Wenzel, R.L. Campbell, B.B. Mansfield; Los Alamos National Laboratory, Gutierrez-Palmenberg, Inc.*

P.93 Document Management and Reader Tracking in the Radiation Protection Automation System (RPAS). *R.L. Campbell, W.J. Wenzel, J.L. Bliss; Gutierrez-Palmenberg, Inc., Los Alamos National Laboratory*

P.94 Design of a Neutron Howitzer for a PuBe Source. *V.D. Cleary, H.J. Gepford; University of Missouri - Rolla Nuclear Engineering*

P.95 NORM in Cathode Ray Tubes. *N.P. Kirner, G.L. Troyer, E.W. Gray, Jr., J.C. Dupaquier, R.A. Jones; Kirner Consulting, Inc., Fluor Hanford*

P.96 Design and Testing of an Innovative Neutron/Photon Shield. *R.J. Wishau, D.L. Wannigman, M.A. Reimus, J.G. Teague, D.V. Brown, D.B. Eason; Los Alamos National Laboratory (LANL), Eagle-Picher Technologies, LLC*

P.97 What is a Contamination Area? *W.D. Gregory; USEC, Inc.*

P.98 Alternate Shielding: Malleable Beta Shielding. *A. Orders, R. Harris; NC State University*

P.99 Protective Clothing: Protection, Comfort, Liability, and Economics. *G.E. Roberts; UniTech Services Group, Inc.*

RADON

P.100 Radon Released from Water Uses in Homes. *J. Luetzelschwab, T. Madden, A. Street, M. Fultz; Dickinson College, M.S. Hershey Medical Center*

P.101 Selection of Optimum ^{222}Rn Source from Local Granite Samples. *A.M. Mamoon, T.M. Qari, S.M. Kamal; Egyptian Atomic Energy Authority, King Abdulaziz University*

P.102 Assessment of Cushionaire as a Radon Barrier. *B. Bjorndal, R. Moridi; Radiation Safety Institute of Canada*

REACTOR HEALTH PHYSICS

P.103 Latest Data on Effective Dose Equivalent for Hot Particles. *X.G. Xu, T. Zhang, C.Y. Shi, C. Kim; Rensselaer Polytechnic Institute*

RISK ANALYSIS

P.104 Deterministic vs. Probabilistic Sensitivity Analysis to Identify Sensitive Parameters for the Dose Assessment in the Residential Scenario Using RESRAD. *S. Kamboj, J.-J. Cheng, C. Yu; Argonne National Laboratory*

3:00 - 5:00 pm **Golden Ballroom**

MPM-A: Safety & Security of Radioactive Sources

Co-Chairs: Joel Lubenau and George Anastas

3:00 PM **MPM-A.1**
Excess Radioactive Sealed Source Disposition Through the U.S. Department of Energy's Offsite Source Recovery Project. *J.P. Grimm; US Department of Energy*

3:15 PM **MPM-A.2**
State and Federal Cooperative Efforts to Manage Orphan Sources and Address Source Security. *R.E. McBurney, J.P. Klinger; Texas Department of Health, Illinois Department of Nuclear Safety*

3:30 PM **MPM-A.3**
Control of Generally Licensed Devices at a Large Corporation. *F.B. Entwistle, M.W. Hinz, M.A. Lewandowski; 3M Corporate Health Physics*

3:45 PM **MPM-A.4**
Roles & Responsibilities of Manufacturers and Suppliers on Strengthening Long Term Security of Radioactive Sources. *G.R. Malkoske; MDS Nordion*

4:00 PM **Panel Discussion**

Monday

3:00 - 5:30 pm Pacific 1

MPM-B: Disposition of Solid Materials from Radiologically Regulated Facilities

Co-Chairs: Shih-Yew Chen and James Yusko

3:00 PM MPM-B.1
NCRP Report No. 141 on Managing Potentially Radioactive Scrap Metal. *S. Y. Chen; Argonne National Laboratory*

3:30 PM MPM-B.2
Technical Basis Development to Support Rulemaking. *C.A. Trottier; US Nuclear Regulatory Commission*

4:00 PM MPM-B.3
Radiological Issues in the Recycling of Contaminated Scrap Metal. *A. LaMastra; Health Physics Associates, Inc.*

4:30 PM MPM-B.4
Processing & Disposition of "Potentially Clean" Solid Materials for Directed First Use. *A.N. Johnson; Duratek*

5:00 PM MPM-B.5
Improving the Regulatory Control over Radioactive Sources. *J.G. Yusko; Pennsylvania Department of Environmental Protection*

3:00 - 5:45 pm Pacific 2

MPM-C: External Dosimetry

Co-Chairs: Rick Cummings and Greg Jones

3:00 PM MPM-C.1
A New Dosimetry for the Atomic-Bomb Survivors of Hiroshima and Nagasaki. *G.D. Kerr, R.W. Young, J.F. Weiss; Kerr Consulting Company, Scientific Solutions & Analysis, US Department of Energy*

3:15 PM MPM-C.2
Fast and Thermal Neutron Activation Measurements in Hiroshima: Comparisons with DS86 and DS02 Calculations. *T. Straume, A. A. Marchetti, G. Rugel, J. E. McAninch, R. Ruhm, T. Faestermann, K. Knie, G. Korschinek, A. Wallner, C. Wallner, P. Men, K.L. Carroll, R.E. Martinelli, S. Egbert; University of Utah, Lawrence Livermore National Laboratory, Technische Universitat Munchen, Ludwig Maximillans Universitat Munchen, Science Applications International Corporation*

3:30 PM MPM-C.3
Radiation Transport Calculations for the New Dosimetry System, DS02. *R.T. Santoro, S.D. Egbert, S.W. White, J.M. Barnes; Oak Ridge National Laboratory, Science Applications International Corporation, Los Alamos National Laboratory*

3:45 PM MPM-C.4
Survivor Radiation Shielding Calculations for the New Dosimetry System, DS02. *S.D. Egbert, R.T. Santoro, J.M. Barnes, J.A. Roberts, D.C. Kaul; Science Applications International Corporation, Oak Ridge National Laboratory*

4:00 PM MPM-C.5
The Effect of Peak Shape and Size on LiF: Mg,Ti Glow Curve Deconvolution Error Calculations. *S.M. Bernal, K.J. Kearfott, A.T. Weston, B.P. Warner, J.M. Hoffman, D.E. Morris; University of Michigan, Los Alamos National Laboratory*

4:15 PM MPM-C.6
ANSI HPS N13.32 Revision - Performance Testing Extremity Dosimeters. *R. Cummings; Idaho National Engineering and Environmental Laboratory*

4:30 PM MPM-C.7
Experience in Satisfying HPS N13.11-2001. *N. Stanford; Stanford Dosimetry*

4:45 PM MPM-C.8
Implementation of the Use of Effective Dose Equivalent in External Dose Assessments. *J.J. Kelly, G. Xu; Entergy Nuclear Operations, Inc., Rensselaer Polytechnic Institute*

5:00 PM MPM-C.9
A Proposed Method of Hot Particle Assay for Estimation of Dose Rate to Skin. *B.E. Heinmiller; Atomic Energy of Canada Ltd.*

5:15 PM MPM-C.10
A Fricke Dosimetric Technique to Determine G-Values for Accelerator-Produced Photons with Energies between 1 and 30 MeV. *J. Macklin, R. Brey, T. Gesell; Idaho State University, Pocatello*

5:30 PM MPM-C.11
Preliminary Study of Real-Time Effective Dose Measurement using MOSFET Dosimeters. *B. Wang, C.-H. Kim, X.G. Xu, J.-W. Lee; Rensselaer Polytechnic Institute*

3:00 - 5:30 pm Pacific 3

MPM-D: RESRAD Code Developments and Applications

Co-Chairs: Charley Yu and Andrew Wallo III

3:00 PM MPM-D.1
Update on RESRAD—New Features and New Members of the Family. *C. Yu, A. Wallo III, W.A. Williams, H. Peterson; Argonne National Laboratory, US Department of Energy*

Monday

3:15 PM **MPM-D.2**
RESRAD-BIOTA: A New Code for Evaluating Environmental Radiation Doses to Ecological Receptors. *C. Yu, D. LePoire, S. Kamboj, T. Klett, J. Arnish, J.-J. Cheng, I. Hlohowskij, S. Domotor, K. Higley, R. Graham, P. Newkirk, M. Boyd, T. Harris; Argonne National Laboratory, US Department of Energy, Oregon State University, US Environmental Protection Agency, US Nuclear Regulatory Commission*

3:45 PM **MPM-D.3**
Current Developments in the RESRAD-BUILD Computer Code. *J.J. Arnish, D. LePoire, J.-J. Cheng, S. Kamboj, T. Klett, C. Yu; Argonne National Laboratory*

4:00 PM **MPM-D.4**
Comparison of RESRAD-OFFSITE and RESRAD. *E.K. Gnanapragasam, C. Yu; Argonne National Laboratory*

4:30 PM **MPM-D.5**
Comparison of Radiation Exposures Estimated by RESRAD-RECYCLE with Real-Life Measurement Data. *J. Cheng, C. Yu, W.A. Williams; Argonne National Laboratory, US Department of Energy*

5:00 PM **MPM-D.6**
Deriving Concentration Guideline Values from Deterministic and Probabilistic RESRAD Analysis at Seneca Army Depot. *S. Kamboj, K. Picel, T. Sydelko, J. Cleary, T. Enroth; Argonne National Laboratory, Seneca Army Depot*

5:15 PM **MPM-D.7**
Documentation, Technical Support, and Web Resources for the RESRAD Family of Codes. *D. LePoire, T. Klett, J. Arnish, C. Yu; Argonne National Laboratory*

3:00 - 5:15 pm **Sheffield/Hampton**

MPM-E: Internal Dosimetry/Bioassay

Co-Chairs: Alan Fellman and Paul Linsalata

3:00 PM **MPM-E.1**
Trends in the U.S. Army Bioassay Program for Internally Deposited Radionuclides. *S. Dunston, S. Goodison, J.W. Collins; US Army Center for Health Promotion and Preventive Medicine*

3:15 PM **MPM-E.2**
Applications of the ICRP Publication 88 Clarification on the Biokinetic Model for Tritium. *C.A. Potter; Sandia National Laboratories*

3:30 PM **MPM-E.3**
Tritium Dosimetry for DTO Exposure. *I. Popescu, C. Chitu; CNE-Prod Cernavoda NPP*

3:45 PM **MPM-E.4**
Use of a Scanning Electron Microscope as a Workplace Investigation Tool and a Possible Basis for Higher than Expected Solubility of a Spherical Form of Uranium. *R.A. Jones; Pacific Northwest National Laboratory*

4:00 PM **MPM-E.5**
A 3D Chord Length Based Model of Alpha Particle Dosimetry in Bone Marrow. *C.J. Watchman, A.P. Shah, J.M. Brindle, D.A. Rajon, W.E. Bolch; University of Florida*

4:15 PM **MPM-E.6**
Revisions to the ORNL Series of Stylized Mathematical Models of the Human Body. *E. Y. Han, W.E. Bolch; University of Florida*

4:30 PM **MPM-E.7**
The Quantitative Analysis of Uranium Isotopes in the Urine of Civilians after Operation Enduring Freedom in Jalalabad, Afghanistan. *A. Durakovic, R. Parrish, A. Gerdes, I. Zimmerman; Uranium Medical Research Centre, University of Leicester & British Geological Survey*

4:45 PM **MPM-E.8**
Indoor and Outdoor Thoron Decay Product Equilibrium at Fernald, OH, New York City and New Jersey. *P. Chittaporn, N.H. Harley, R. Medora, R. Merrill; New York University School of Medicine, Fluor Fernald Radiation Control Section*

5:00 PM **MPM-E.9**
Indoor Thoron Profiles at Fernald, OH and a New Jersey Home. *N.H. Harley, P. Chittaporn, R. Medora, R. Merrill; New York University School of Medicine, Fluor Fernald Radiation Control Section*

NOTE FOR CHPs

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

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

Tuesday

7:15 - 8:15 AM

CEL-3

Room: Pacific 1

Radiation Threshold – What Do Basic Studies Tell Us?
J. Ward; University of California - San Diego

7:15 - 8:15 AM

CEL-4

Room: Pacific 2

Nuclear/Radiological Emergency Preparedness in Pennsylvania. *D.J. Allard; Pennsylvania Department of Environmental Protection*

8:30 - 11:45 am

Golden Ballroom

TAM-A: Emergency Planning/Response

Co-Chairs: Bill Rhodes and Trish Milligan

8:30 AM

TAM-A.1

Easy Calculation of Radiation Dose above Contaminated Planar Sources. *A. Brodsky; SAIC/Georgetown University*

8:45 AM

TAM-A.2

Review of Nuisance Factors During Radiological Emergency Response Operations. *C.A. Riland; Remote Sensing Laboratory - Bechtel Nevada*

9:00 AM

TAM-A.3

Why Traditional Units Must be Used in Training Responders. *M.J. Stangler, A. Brodsky, G. Anastas; Consultant, VA, SAIC, Georgetown University, Environmental Evaluation Group*

9:15 AM

TAM-A.4

Homeland Defense Equipment Reuse Program: A Report on the Pilot Phase and Nationwide Initiative. *K. Thomas, G. Anastas; US Department of Justice, DC, Environmental Evaluation Group*

9:30 AM

TAM-A.5

How Will We Deal with the Cleanup Waste from an RDD? *J.B. Martin, D.J. Strom; Pacific Northwest National Laboratory*

9:45 AM

TAM-A.6

Homeland Security Blankets - Care Packages for the Worried Well. *D.J. Strom, P.S. Stansbury; Pacific Northwest National Laboratory*

10:00 AM

BREAK

10:30 AM

TAM-A.7

Concerns for Homeland Security Could Promote Public Understanding of Radiation. *R.H. Johnson; Radiation Safety Academy*

10:45 AM

TAM-A.8

Results of a Roundtable on Hospital Management of Mass Casualties from a Radiological Incident. *J.M. Smith, M. Spano, C. McCurley, R.C. Whitcomb, Jr., C.W. Miller; Centers for Disease Control and Prevention*

11:00 AM

TAM-A.9

FALLING STAR - A Radiological and Hazardous Materials Federal Field Exercise with the Environmental Protection Agency as Lead Federal Agency. *J. Edwards, E. Tupin, F. Marcinowski, M. Boyd; US Environmental Protection Agency*

11:15 AM

TAM-A.10

Protective Action Guides for Recovery and Re-Entry. *E.A. Tupin, J. Edwards, F. Marcinowski; U.S. Environmental Protection Agency*

11:30 AM

TAM-A.11

Formation of the Department of Homeland Security and Its Effect on the Environmental Protection Agency's Radiological Emergency Response. *F. Marcinowski, J. Edwards, E. Tupin, M. Boyd; U.S. Environmental Protection Agency*

8:30 - 11:30 am

Pacific 1

TAM-B: Medical Health Physics Section Session

Co-Chairs: Karen Langley and Jim Tarpinian

8:30 AM

TAM-B.1

The Controversy Concerning the Risks of the Use of CT Scans in Children. *R.L. Brent; duPont Hospital for Children*

9:00 AM

TAM-B.2

TBD.

9:30 AM

TAM-B.3

Reduction in Fluoroscopic Dose in Pediatric Patients. *J.L. West, L.L. Coronado; National Institute of Health*

9:45 AM

TAM-B.4

Regulatory Aspects of Computerized Tomography Screening. *D.L. Angelo, R.E. McBurney; Pennsylvania Department of Environmental Protection, Texas Department of Health*

10:00 AM

TAM-B.5

An Overview of PET/CT Fusion Imaging. *C.M. Plott; Forsyth Medical Center and Presbyterian Hospital*

10:15 AM

BREAK

10:45 AM

TAM-B.6

An Overview: IND, NDA, RDRC, and IRBS for the HP. *L.L. Coronado; National Institutes of Health*

11:00 AM

TAM-B.7

Dose Calibrator Calibration: Nationally Recognized Standards or the Manufacturer's Instructions? *G.M. Sturchio, A.D. Amundson, R. Forrest; Mayo Clinic, University of Pennsylvania*

Tuesday

11:15 AM **TAM-B.8**
Radiological Emergency Medical Preparedness & Management Training Program. *J.T. Bushberg, K.L. Miller, M.B. Hartman, E.M. Leidholdt, Jr., R.W. Derlet, V. Ritter; University of California - Davis, Penn State University*

11:30 AM **Medical Section Business Meeting**

8:30 am – Noon **Pacific 2**

TAM-C: Environmental

Co-Chairs: Jan Johnson and Tom Gesell

8:30 AM **TAM-C.1**
Cesium-137 Concentration and Erosion Following Forest Wildfire. *M.P. Johansen, D.D. Breshears, F.W. Whicker, T.E. Hakonson; Colorado State University, Los Alamos National Laboratory*

8:45 AM **TAM-C.2**
Increased Contaminant Transport through Wind Erosion Following Wildfire. *J.J. Whicker, J.E. Pinder, D.D. Breshears, K.N. Mack; Los Alamos National Laboratory, Colorado State University*

9:00 AM **TAM-C.3**
Transport of Depleted Uranium Oxidation Products in a Field Study Site. *T.P. Oxenberg, E.J. Bouwer; Johns Hopkins University*

9:15 AM **TAM-C.4**
Calculation of Effective Dose Due to Uranium and its Decay Products in Groundwaters. *D.A. Falta, R.A. Fjeld, T.A. DeVol; Clemson University*

9:30 AM **TAM-C.5**
Evaluation of Uranium Contamination in a Residential Area Around Y12. *J. Hanley, M. Evans, P. Charp; Agency for Toxic Substances and Disease Registry*

9:45 AM **TAM-C.6**
Limiting Values for ¹³¹I Concentrations in Air Near Oak Ridge National Laboratory, 1953-1956. *H.M. Prichard, J.L. Alvarez, J.A. Auxier; Auxier & Associates, Inc.*

10:00 AM **BREAK**

10:30 AM **TAM-C.7**
Cooperative Monitoring for Radionuclides in Central Asia Transboundary Rivers. *A.H. Mohagheghi, D.S. Barber, H.D. Passell; Sandia National Labs*

10:45 AM **TAM-C.8**
Comparison of ¹²⁹I and ¹³⁷Cs in Marshall Islands Soil. *R.C. Whitcomb, Jr.; Centers for Disease Control and Prevention*

11:00 AM **TAM-C.9**
Development of Analytical Method for Pu in Soil Samples using UTEVA Resin. *Y. Ohtsuka, Y. Takaku, S. Hisamatsu, J. Inaba; Institute for Environmental Sciences*

11:15 AM **TAM-C.10**
An Evaluation of Radon-Influenced Alpha Measurements Collected During NRC License Termination Surveys at a Decommissioned Army Facility. *J.R. Hackett, K.L. Kadlubak, J. Travers, T. Enroth, J. Cleary, R. McConn; Parsons, United States Corps of Engineers, New York District, Seneca Army Depot, Pacific Northwest National Laboratory*

11:30 AM **TAM-C.11**
Smoking as a Confounder in Ecologic Correlations of Cancer Mortality Rates with Average County Radon Levels. *J.S. Puskin; US Environmental Protection Agency*

11:45 AM **TAM-C.12**
Lung Cancer Risk in Non-Smokers from Residential Radon: Review of Case-Control Studies. *J.S. Neuberger, T.F. Gesell; University of Kansas School of Medicine, Idaho State University*

8:30 am – Noon **Pacific 3**

TAM-D: Dose Reconstruction Under the Energy Employees Occupational Illness Compensation Program

Co-Chairs: Jim Neton and Dick Toohey

8:30 AM **TAM-D.1**
An Overview of the Energy Employees Occupation Illness Compensation Program (EEOICPA). *L.J. Elliott; National Institute for Occupational Safety and Health*

8:45 AM **TAM-D.2**
Implementation of the Dose Reconstruction Rule – 42 CFR Part 82. *J.W. Neton; National Institute for Occupational Safety and Health*

9:15 AM **TAM-D.3**
The Application of Dose Reconstruction Results to NIOSH-IREP (NIOSH's Version of the Interactive Radio-Epidemiological Program) in Estimating the Probability of Causation of Radiogenic Cancer. *R.W. Henshaw, L.J. Elliott; National Institute for Occupational Safety and Health*

9:45 AM **TAM-D.4**
Creation of a Dose Reconstruction Organization. *R.E. Toohey; Oak Ridge Associated Universities*

10:00 AM **TAM-D.5**
Flow of Claims through the Dose Reconstruction Process. *J.P. Griffin; MJW Corporation Inc.*

10:15 AM **BREAK**

Tuesday

10:45 AM **TAM-D.6**
Computer Assisted Telephone Interview in Support of EEOICPA Dose Reconstruction. *M.C. McFee, R.P. Weaver, J.P. Griffin; MJW Corporation Inc.*

11:00 AM **TAM-D.7**
Internal Dose Reconstruction Under the Energy Employees Occupational Illness Compensation Program. *E.M. Brackett, D.K. Allen, R.W. Kenning, V.A. King, B.M. Olsen; MJW Corporation Inc., National Institute for Occupational Safety and Health*

11:15 **TAM-D.8**
External Dose Reconstruction Under the Energy Employees Occupational Illness Compensation Program. *S.E. Merwin, T.D. Taulbee, M.H. Smith, D.N. Stewart; Dade Moeller & Associates, National Institute for Occupational Safety & Health*

11:30 AM **TAM-D.9**
A Monte Carlo Approach to Estimate Organ Dose Uncertainty. *T.D. Taulbee, J.W. Neton; National Institute for Occupational Safety & Health*

11:45 AM **TAM-D.10**
Site Characterization of Atomic Weapons Employers. *J.L. Anderson, M. H. Smith, D.N. Stewart; MJW Corporation, Inc., Dade Moeller & Associates*

8:30 - 11:45 am **Sheffield/Hampton**

TAM-E: Government Section Special Session

Co-Chairs: Edgar Bailey and Frank Bradley

8:30 AM **TAM-E.1**
Superfund Radiation Policies. *S.W. Walker; US Environmental Protection Agency*

9:15 AM **TAM-E.2**
U.S. Nuclear Regulatory Commission Regulations: Influencing the Regulatory Process. *C.G. Jones; US Nuclear Regulatory Commission*

9:45 AM **TAM-E.3**
EPA-NRC MOU for Consultation and Finality on Decommissioning - NRC Views. *C.J. Paperiello; US Nuclear Regulatory Commission*

10:15 AM **BREAK**

10:45 AM **TAM-E.4**
The USNRC/USEPA MOU on D&D: What EPA Thinks It Says and Means. *S.W. Walker; US Environmental Protection Agency*

11:15 AM **TAM-E.5**
NRC-EPA MOU on D&D - What the States Think it Says and Means. *T.P. O'Kelley; Organization of Agreement States*

2:30 - 5:30 pm **Golden Ballroom**

TPM-A: J. Newell Stannard and the University of Rochester

Chair: William Blair

2:30 PM **TPM-A.1**
Sketch of the University of Rochester Atomic Energy Project. *J.N. Stannard; University of Rochester, retired; University of California - San Diego, Retired*

2:45 PM **TPM-A.2**
University of Rochester and the Health Physics Opportunity. *P.S. Rohwer; Oak Ridge National Laboratory, Retired*

3:00 PM **TPM-A.3**
Firm Foundations for Understanding Radionuclide Dosimetry and Health Effects. *B.B. Boecker; Lovelace Respiratory Research Institute*

3:30 PM **BREAK**

4:00 PM **TPM-A.4**
Advances in Aerosol Science for Radiation Protection. *O.G. Raabe; University of California - Davis*

4:30 PM **TPM-A.5**
Field Studies of Plutonium and Fission Products in Animals. *R.G. Thomas; Consultant*

5:00 PM **TPM-A.6**
Radon, Smoking, and Lung Cancer: We've Come a Long Way Baby! *J.A. Johnson; MFG, Inc.*

5:15 PM **TPM-A.7**
The Chernobyl Accident: Predictions vs. Reality. *M. Goldman; University of California - Davis*

2:30 - 5:15 pm **Pacific 1**

TPM-B: AAHP Special Session: Medical Health Physics - The Future of Credentialing

Co-Chairs: Jim Tarpinian and Karen Langley

2:30 PM **TPM-B.1**
Medical Isotope Supplies and National Policy in the United States. *T.S. Tenforde; National Council on Radiation Protection*

2:45 PM **TPM-B.2**
Current Issues in Radioisotope Supply, Applications Research, Safeguarding, Recycle, and Disposition. *D.R. Fisher; Pacific Northwest National Laboratory*

3:00 PM **TPM-B.3**
Key Features of Revised 10 CFR Part 35, "Medical Use of Byproduct Material," and Revision of Requirements for Recognition of Specialty Boards. *R.W. Broseus, A.N. Tse, S.L. Wastler, F.D. Brown; US Nuclear Regulatory Commission*

Tuesday

3:15 PM **TPM-B.4**
Implementation Issues for 10 CFR Part 35, "Medical Use of Byproduct Material." *L.M. Psyk; US Nuclear Regulatory Commission*

3:30 PM **TPM-B.5**
Training and Experience Recommendations Developed by the Advisory Committee on Medical Use of Isotopes. *R.J. Vetter, R.E. McBurney; Mayo Clinic, Texas Department of Health*

3:45 PM **BREAK**

4:15 PM **TPM-B.6**
Standard of Qualification and Practice - Healthcare Facility Radiation Safety Officer. *C.O. Owen; Lawrence Livermore National Laboratory*

4:30 PM **TPM-B.7**
Certification and Credentialing: Purpose, Goals, Processes, Advantages, and Disadvantages *E.D. Bailey; California Radiologic Health Branch*

4:45 PM **TPM-B.8**
Certification in Medical Health Physics by the A.B.M.P. *K.D. Steidley; St. Barnabas Medical Center*

5:00 PM **TPM-B.9**
Certification and Licensing Issues in Medical Health Physics. *J. St.Germain; Memorial Sloan-Kettering Cancer Center*

5:15 PM **AAHP Open Meeting**

2:30 - 3:45 pm **Pacific 2**

TPM-C: Source Recovery Special Session

Co-Chairs: Robin Shult and Mike Davidson

2:30 PM **TPM-C.1**
Emergency Response to Dispersal of ¹⁹²Ir Source. *R.R. Shult; Duratek*

3:00 PM **TPM-C.2**
An Unusual Incident: Breached ²²Na Sealed Source. *L.E. Porter; Washington State University*

3:15 PM **TPM-C.3**
Off-Site Source Recovery Program from a Customer's Prospective. *D.D. Brown, J.M. Mead; Halliburton Energy Services, Inc.*

3:30 PM **TPM-C.4**
Lessons Learned from an Accidental Release of ⁹⁰Y Microspheres. *D.W. Burkett, D.R. Anglin; Vanderbilt University*

4:15 - 5:30 pm **Pacific 2**

TPM-C: Operational Health Physics

Co-Chairs: Robin Shult and Mike Davidson

4:15 PM **TPM-C.5**
Lessons Learned in Dealing with the Media. *K.L. Miller; Penn State Hershey Medical Center*

4:30 PM **TPM-C.6**
Safety Training of Adults; Techniques and Pitfalls. *D.D. Sprague; Lawrence Livermore National Laboratory*

4:45 PM **TPM-C.7**
Innovative Outreach Initiatives in Safety Training. *A. Orders; NC State University*

5:00 PM **TPM-C.8**
Adult Educational Principals Applied to Radiation Safety Training. *J.P. Pasinosky; Roche Palo Alto*

5:15 PM **TPM-C.9**
Evolutionary Laboratory Training to Meet the User and Regulatory Needs. *J.J. Pickering; San Jose State University*

2:30 - 3:30 pm **Pacific 3**

TPM-D: Dose Reconstruction Under the Energy Employees Occupational Illness Compensation Program

Co-Chairs: Jim Neton and Dick Toohey

2:30 PM **TPM-D.1**
Development of DOE Site Profiles to Support Dose Reconstruction. *J.L. Kenoyer; Dade Moeller and Associates, Inc.*

2:45 PM **TPM-D.2**
Development of External Dosimetry Parameters for Site Profiles. *J.J. Fix, J.L. Kenoyer, S.E. Merwin, W.G. Tankersley, T.D. Taulbee; Pacific Northwest National Laboratory, Dade Moeller & Associates, Oak Ridge Associated Universities, National Institute for Occupational Safety and Health*

3:00 PM **TPM-D.3**
Evaluation of Environmental Measurements and Calculations for Site Profiles. *E.M. Rollins; Dade Moeller & Associates*

3:15 PM **TPM-D.4**
Construction of a Secure Online Environment for Dose Reconstructions. *J.V. Wierowski, P.W. Wallace, M. D. Wierowski; MJW Corporation Inc., Oak Ridge Associated Universities*

Tuesday

4:00 - 5:15 pm Pacific 3

TPM-D: Risk Analysis

Co-Chairs: Iulian Apostoaei and John Mauro

4:00 PM TPM-D.5
Total Risk of Cancer from Ingestion and Inhalation of Multiple Radionuclides. *A.I. Apostoaei, B.A. Thomas, F.O. Hoffman; SENES Oak Ridge, Inc.*

4:15 PM TPM-D.6
A Web-Based Calculator for Estimating Individual Thyroid Radiation Dose and Cancer Risk from Nevada Test Site Fallout. *S.L. Simon, A. Bouville, R. Weinstock, C. Land, C. Lafond, M. Farrell; National Cancer Institute*

4:30 PM TPM-D.7
Lifetime Risk Assessment for Transuranic Intake as a Function of Age for Continuous and Acute Intakes. *S.M. Bernal, K.J. Kearfott; University of Michigan*

4:45 PM TPM-D.8
U.S. Army Guidance for Deployed Preventive Medicine Personnel on Radiological Health Risk Management. *S. Goodison, S. Dunston, M.A. Melanson, D.P. Alberth; U.S. Army Center for Health Promotion and Preventive Medicine*

5:00 PM TPM-D.9
Risk-Based Decision Criteria for the Characterization, Cleanup, and Closeout of Sites with Potential Sub-surface Contamination Containing Small Discrete Sources of ²²⁶Ra. *J.J. Mauro, W.D. Ulicny, H. Chmelynski; S. Cohen & Associates, Inc.*

2:30 - 3:30 pm Sheffield/Hampton

TPM-E: Government Section Special Session

Co-Chairs: Frank Bradley and Edgar Bailey

2:30 PM TPM-E.1
FDA's Regulatory Program for Lasers and Electronic Products. *S.L.B. Kent, J.E. Dennis; US Food and Drug Administration*

2:45 PM TPM-E.2
The Impact of FDA's Laser Notice 50 on Laser Safety Programs. *S.L.B. Kent, J.E. Dennis, G.L. Zaharek, F.J. Eng; US Food and Drug Administration*

3:00 PM TPM-E.3
Certified Laser Safety Officer Program. *R.M. Greene; Board of Laser Safety*

3:15 PM TPM-E.4
Outdoor Laser Sculptures. *N. Ballard; Rarefied Media (presented by F. Bradley)*

3:30 PM BREAK

4:00 PM Government Section Business Meeting

Wednesday

7:15 - 8:15 AM

CEL-5

Room: Pacific 1

Solar Evolution and its Effects on Background Cosmic Radiation Levels through Time. *P. Andrew Karam, University of Rochester*

7:15 - 8:15 AM

CEL-6

Room: Pacific 2

Emergency Response Instrumentation Issues. *C. Riland; Bechtel Nevada*

8:30 - 11:15 am

Golden Ballroom

WAM-A: RSO/CRSO Special Session

Co-Chairs: Paul Lavelly and President-Elect of the RSO Section

8:30 AM

WAM-A.1

Source Efficiencies for Various Materials Encountered During Decommissioning Surveys at Biomedical Research Facilities. *M.J. Dorman, J. Krampert, G.M. Sturchio; Merck & Co. Inc., Mayo Clinic*

8:45 AM

WAM-A.2

Health Physics Concerns Regarding Neutron Source Use. *J.F. Schweitzer, J.C. Cooper; Purdue University*

9:00 AM

WAM-A.3

Non-Ionizing Radiation Protection Program Management in a Large Research and Manufacturing Environment. *M.A. Lewandowski, M.W. Hinz; 3M Corporate Health Physics*

9:15 AM

WAM-A.4

Neutron Induced Radioactivity and Gamma Exposure Calculation from Laser Fusion Experiment. *M.C. Jo, S.G. Oberg, W.B. McCarthy; University of Nevada Reno, Massachusetts Institute of Technology*

9:30 AM

WAM-A.5

How RSOs Can be Involved in Homeland Security and Response to Nuclear Terrorism. *R.H. Johnson; Radiation Safety Academy*

9:45 AM

WAM-A.6

Standardized Radiation Safety Precautions for Surgical Procedures Involving the Use of ^{99m}Tc. *R. Michel, C.L. Hofer, M.J. Zorn; VA San Diego Healthcare System, Iowa State University*

10:00 AM

BREAK

10:30 AM

WAM-A.7

Radiation Safety Considerations for the Disposal of Medical Waste Containing RAM. *R. Michel, M.J. Zorn; VA San Diego Healthcare System*

10:45 AM

WAM-A.8

Radiation Safety Considerations in GliSite ¹²⁵I Brain Implant Procedures. *J. Strzelczyk, R. Safadi; University of Colorado, HSC*

11:00 AM

WAM-A.9

Review and Approval of Human Research Studies Involving Machine Produced Radiation. *M.L. Richard; Indiana University Medical Center*

11:15 AM

RSO Section Business Meeting

8:30 am – Noon

Pacific 1

WAM-B: Accelerator Section Special Session

Co-Chairs: Bob Casey and Carter Ficklin

8:30 AM

WAM-B.1

Accelerator Radiological Protection - A Personal and Privileged Odyssey. *R.H. Thomas; Retired. (G. William Morgan Lecture)*

9:15 AM

WAM-B.2

Trapped Antiprotons and Their Radiation Hazards. *J.D. Cossairt, N.V. Mokhov; Fermi National Accelerator Laboratory*

9:45 AM

BREAK

10:15 AM

WAM-B.3

Accelerator-Driven Waste Transmutation Experiment. *V. Vylet, C.D. Bowman, A.S. Crowell, C.R. Howell, A. Tonchev, W. Tornow; Duke University, ADNA Corporation*

10:45 AM

WAM-B.4

Measurements and Calculations of Neutron Energy and Time-of-Flight Spectra Outside the Lateral Shield of a High-Energy Electron Accelerator Beam Dump. *S.H. Rokni, J.C. Liu, K.R. Kase, S. Roesler, S. Taniguchi, T. Nakamura; Stanford Linear Accelerator Center, CERN, Japan Synchrotron Radiation Research Institute Hyogo, Tohoku University*

11:15 AM

WAM-B.5

Electron Accelerator ⁷Be Production, Associated Problems, and Proposed Remedy. *R.T. May, K.B. Welch; Thomas Jefferson National Accelerator Facility*

11:30 AM

WAM-B.6

14 MeV Neutron Instrument Response. *M.A. Duran; Los Alamos National Laboratory Operational Health Physics*

11:45 AM

WAM-B.7

Radiation Protection Scheme for 48-GeV and 500-kW E158 Experiment. *X.S. Mao, A.A. Prinz, H.Y. Khater, R. Seefred; Stanford Linear Accelerator Center*

8:30 - 11:30 am

Pacific 2

WAM-C: Decommissioning Section Special Session

Co-Chairs: Debra McBaugh and Scott Kirk

8:30 AM

WAM-C.1

Current NRC Activities on Controlling the Disposition of Solid Materials. *J.T. Greeves, P. Holahan, F. Cardile, P. Sobel, C. Abrams; US Nuclear Regulatory Commission*

Wednesday

8:30 am – Noon

Pacific 3

8:45 AM WAM-C.2

Use of ANSI/HPS N13.12-1999 "Surface and Volume Radioactivity Standards for Clearance" in Decontamination and Decommissioning - A 2003 Update. *P.S. Stansbury; Pacific Northwest National Laboratory*

9:00 AM WAM-C.3

Development of a Department of Energy Authorized Limits Request at Hanford. *K.A. Robertson-DeMers; Spectrum Technical Services, Inc.*

9:15 AM WAM-C.4

Addressing Fundamental Human Rights and the Environment by Unrestricted Release Dose-Based Criteria. *K.D. Anderson; Environmental Chemical Corporation*

9:30 AM WAM-C.5

Implementation of Draft NUREG-1761 Radiological Surveys for Controlling Release of Solid Materials. *E.W. Abelquist, G.E. Powers; Oak Ridge Associated Universities, U.S. Nuclear Regulatory Commission*

9:45 AM BREAK

10:15 AM WAM-C.6

Extending RESRAD to Support MARSSIM through COMPASS: An Application of the Openlink System. *J.J. Arnish, S.Y. Chen, R. Johnson, D. LePoire, E. Abelquist, T. Bauer; Argonne National Laboratory, Oak Ridge Institute for Science and Education*

10:30 AM WAM-C.7

Technical Issues in Reclassifying MARSSIM Survey Units. *J.-C. Dehmel; U.S. Nuclear Regulatory Commission*

10:45 AM WAM-C.8

Decommissioning an Institutional Radioactive and Chemical Waste Handling Facility using a Simplified MARSSIM Approach. *J.G. Tripodes, K.S. Swift, R.B. Rittenberg; Lawrence Livermore National Laboratory, University of California - Irvine, Chase Environmental Group, Inc.*

11:00 AM WAM-C.9

Termination of the Westinghouse Southeast Nuclear Service Center Radioactive Material License. *B.A. Watson, R.C. Crott, R.G. Cline, J.R. Peters; BNFL Inc., Westinghouse, Westinghouse Electric Co. LLC*

11:15 AM WAM-C.10

Radiation Survey, Decommissioning and Remediation of Non-Nuclear Industrial Sites in the Netherlands. *L.P.M. van Velzen; NRG vof, The Netherlands*

11:30 AM Decommissioning Section Business Mtg

WAM-D: Regulatory/Legal Issues

Co-Chairs: Steve Simon and Edward Tupin

8:30 AM WAM-D.1

The Revised Code of Conduct on the Safety and Security of Radioactive Sources. *J.S. Wheatley, A.D. Wrixon, W. Tonhauser, B. Dodd, S. McIntosh; International Atomic Energy Agency (IAEA), Australian Nuclear Science & Technology Organisation*

8:45 AM WAM-D.2

A New IAEA Categorization of Radioactive Sources. *B. Dodd, J. Wheatley, T. McKenna; International Atomic Energy Agency (IAEA)*

9:00 AM WAM-D.3

Reducing the Excess Radioactive Source Inventory in America: What are We Getting -What are We Leaving? *L. Leonard, M.W. Pearson, S. Leonard; Los Alamos National Laboratory (LANL)*

9:15 AM WAM-D.4

Regulatory Problems with Sealed Sources. *J.A. Tompkins; Los Alamos National Laboratory (LANL)*

9:30 AM WAM-D.5

Regulatory Considerations for Adopting ICRP Publication 60 Dosimetric Methodology Recommendations. *P. O'Connell, J. Rabovsky, J. Foulke; US Department of Energy*

9:45 AM WAM-D.6

Proposed Changes to Federal Radiation Protection Guidance for the General Public. *F. Marcinowski, M.A. Boyd; U.S. Environmental Protection Agency*

10:00 AM BREAK

10:30 AM WAM-D.7

A New Accelerator Licensing Program in Pennsylvania. *S.E. Williams, L.R. Urciuolo, D.J. Allard; Pennsylvania Department Bureau of Radiation Protection*

10:45 AM WAM-D.8

Common Causes as the Basis for Non-Compliance Notices to Licensees of Radioactive Materials. *S.K. Dua, J. Mwaisela; Florida International University*

11:00 AM WAM-D.9

The Commonwealth of Pennsylvania's Review, Regulatory Approach and Actions Regarding the Practice of CT Screening. *D.J. Allard; Pennsylvania Department Bureau of Radiation Protection*

11:15 AM WAM-D.10

A Framework for the Protection of the Environment from Radiation. *B.L. Tracy; Health Canada*

11:30 AM WAM-D.11

Efforts in Preventing of Radioactively Contaminated Building Incidents in Taiwan. *W.S. Liu, C.C. Yuan, S.J. Su; Atomic Energy Council, Taiwan*

Wednesday

11:45 AM **WAM-D.12**
Scientific Advantages and Absurdities of SI Units in Radiation Protection. *G. Anastas, A. Brodsky, M. Stangler; Environmental Evaluation Group, Science Applications International Corporation, Consultant*

8:30 - 11:00 am **Sheffield/Hampton**

WAM-E: NESHAPs Special Session - Radioactive Air

Co-Chairs: John Glissmeyer and Matthew Barnett

8:30 AM **WAM-E.1**
Results of ANSI/HPS N13.1-1999 Inspection and Cleaning Requirements at Two Facilities. *J.M. Barnett, M.Y. Ballinger, T.L. Gervais, D.D. Douglas, D.L. Edwards; Pacific Northwest National Laboratory, Battelle Seattle Research Center*

8:45 AM **WAM-E.2**
Comparison of an Old Stack Sampling System to a New Shrouded Probe at Hanford. *L.P. Diediker, D.L. Dyekman, J.A. Glissmeyer; Fluor Hanford, Pacific Northwest National Laboratory*

9:00 AM **WAM-E.3**
Evaluation of Radiological Sampling System Locations to the Revised ANSI/HPS N13.1-1999 Standard for Two Emission Units. *M.Y.B. Ballinger; Battelle Pacific Northwest National Laboratory*

9:15 AM **WAM-E.4**
Comparison of a Computational Fluid Dynamics Model with Exhaust Flow Data from a Scale Model Stack. *M.Y. Ballinger, K.P. Recknagle, J.M. Barnett; Battelle Seattle Research Center, Battelle, Pacific Northwest National Laboratory*

9:30 AM **WAM-E.5**
Evaluation of Response of the INEEL Radiological Air Surveillance Network to Acute and Chronic Releases. *P.D. Ritter, C.A. Whitaker, W.J. Behymer, J.F. Sagendorf; Idaho National Engineering and Environmental Laboratory, State of Idaho INEEL Oversight Program, Idaho State University*

9:45 AM **BREAK**

10:15 AM **WAM-E.6**
Implementing a PIC Level Program at SRS. *B.C. Blunt; Westinghouse Savannah River Co.*

10:30 AM **WAM-E.7**
Ambient Monitoring to Demonstrate NESHAP Compliance - One Site's Experience. *M.W. Hyder, B.Y. Butler-Veytia; Wind River Environmental Group, URS*

10:45 AM **WAM-E.8**
Comparison of CAP88-PC and GENII Version 2 Results for Chronic Atmospheric Releases. *B.A. Napier, S. Chaki; Pacific Northwest National Laboratory, US Environmental Protection Agency*

2:30 - 5:00 pm **Golden Ballroom**

WPM-A: Bioeffects

Co-Chairs: Raymond Guilmette and Daniel Strom

2:30 PM **WPM-A.1**
Human Cells Respond to Changes in Background Radiation by Inducing Specific Heat Shock Proteins. *R.A. Guilmette, N.C. Mishra, S.W. Allen, S.P. Saxena; Los Alamos National Laboratory, Lovelace Respiratory Research Institute*

2:45 PM **WPM-A.2**
Micronuclei Resulting from Preirradiation of Cell Culture Surface. *N. Medvedeva, J. Ford, L. Braby; Texas A&M University*

3:00 PM **WPM-A.3**
Radiation Quality Of Environmental Tritium. *J. Chen, D. Meyerhof; Radiation Protection Bureau, Health Canada*

3:15 PM **WPM-A.4**
Physical and Cytogenetic Consequences of a Radiation Accident. *B.A. Ulsh, J.A. Dolling, R. Carter, D.R. Boreham; McMaster University, Credit Valley Hospital*

3:30 PM **BREAK**

4:00 PM **WPM-A.5**
Solid Cancer Incidence Among The Chernobyl Emergency Workers: Estimation Of Radiation Risks. *V.K. Ivanov, A.I. Gorsky, R.N. Naumenko; Medical Radiological Research Center*

4:15 PM **WPM-A.6**
Population-Genetic Evaluation of Lifespan of Exposed Individuals and their Offsprings. *N.V. Sotnic, V.I. Telnov; Southern Ural Biophysics Institute*

4:30 PM **WPM-A.7**
Clinical Aspects of Nervous System and Mentality Status of People in Chronic Radiation Disease Distant Effects Period. *G.P. Dimov, O.I. Khudyakova, G.A. Veremeyeva, A.V. Akleyev; Urals Research Center for Radiation Medicine*

4:45 PM **WPM-A.8**
Wiebull Model as Applied to Dose Dependence of Nuclear Workers with Chronic Radiation Syndrome. *S.V. Osovets, T.V. Azizova, M.B. Druzhinina, V.S. Nedro; Southern Ural Biophysics Institute*

Wednesday

2:30 - 5:15 pm Pacific 1

WPM-B: Waste Management

Co-Chairs: Kathy Higley and Mike Davidson

2:30 PM WPM-B.1
Radioactive Source Disposal Project. *D.D. Brown; Halliburton Energy Services*

2:45 PM WPM-B.2
Qualifying the ZEUS System for Verification of GIC Room Trash from Radiation Controlled Areas at LANL. *S.C. Myers; Eberline Services*

3:00 PM WPM-B.3
The Influence of Clay Type on the Leaching of Cesium from Cement. *D. Stephenson, J.P. Sessoms, W.H. Johnson; University of Nevada Las Vegas*

3:15 PM WPM-B.4
Characterization of Old Hydrofracture Facility Demolition Debris for Disposal at the Oak Ridge Environmental Management Waste Management Facility. *K.R. Kleinhans, G.J. Hampshire; MACTEC Development Corporation, Bechtel Jacobs, LLC*

3:30 PM WPM-B.5
Remediation of Maxey Flats Disposal Site. *R.R. Shult, G. Rice; Duratek*

3:45 PM BREAK

4:15 PM WPM-B.6
Transuranic Waste Shipments in Double Contained Packages. *J.K. Channell; New Mexico Environmental Evaluation Group*

4:30 PM WPM-B.7
Waste Incidental to Reprocessing (WIR) Evaluation. *K.A. Roberts; URS Corporation*

4:45 PM WPM-B.8
A New - Deterministic Approach in HLLLW Management. *M.M. Ninkovic; Institute of Nuclear Sciences - Vinca*

5:00 PM WPM-B.9
Nuclear Isomer Production for Hazardous and Mixed Waste Assay. *V. Makarashvili, D.P. Wells, F.A. Selim, J.E. Kwofie, T. Roney, G. Erickson; Idaho State University, Idaho National Engineering and Environmental Laboratory, Boise State University*

2:30 - 3:30 pm Pacific 2

WPM-C: Decommissioning

Chair: Bob Cherry

2:30 PM WPM-C.1
Research to Determine Source Efficiency for Scabbled and Rough Concrete Surfaces. *M.T. Bak, L.E. Rocha, K.A. Higley; Oregon State University, Portland General Electric*

2:45 PM WPM-C.2
Radiation Dosimetry of the Pressure Vessel Internals of the High Flux Beam Reactor. *R.N. Reciniello, N.E. Holden, J.P. Hu, D.C. Rorer; Brookhaven National Lab*

3:00 PM WPM-C.3
Determination of Tritium and ¹⁴C Concentrations in Two Hydrostratigraphic Units below the University of California - Davis Waste Burial Holes at the Laboratory for Energy-Related Health Research/South Campus Disposal Site (LEHR/SCDS). *S.H. Pay; California State University - Sacramento*

3:15 PM WPM-C.4
Use of Ground Penetrating Radar to Identify Concrete Embedded Components in Hot Cell Shield Walls. *B.A. Watson; BNFL Inc*

4:00 - 4:45 pm Pacific 2

WPM-C: Accelerator Health Physics

Co-Chairs: Bob Casey and Carter Ficklin

4:00 PM WPM-C.5
Electret Ion Chambers for Measurement of Photon Exposure Levels in a 1.5 - 2.5 Microsecond Pulse Length Linear Accelerator Lab. *P. Demopoulos, G. Andrews, P. Kotrappa; Radiation Safety Academy, Yale University, Rad Elec Inc.*

4:15 PM WPM-C.6
Calculation of Dose Coefficients for Radionuclides Produced in Spallation Neutron Sources. *J. Shanahan, A. Arndt, C. Campbell, R. Brey, M. Rudin, P. Patton; University of Nevada Las Vegas, Idaho State University*

4:30 PM WPM-C.7
Determination of the Photonuclear Cross-Section of ¹²⁹I(γ, n)¹²⁸I. *G. Kharashvili, R.R. Brey, D.P. Wells, J.F. Harmon, T.F. Gesell; Idaho State University*

4:45 AM Accelerator Section Business Mtg

2:30 - 5:30 pm Pacific 3

WPM-D: Chernobyl New Safe Confinement

Co-Chairs: Dillard Shipler and Bruce Napier

2:30 PM WPM-D.1
Conceptual Design of the Chernobyl New Safe Confinement—An Overview. *E.A. Schmieman, P. Convert, M. Wrona, V. Rudko, M. Durst; Battelle-PNNL, Electricité de France, Bechtel International, Inc., KSK (Ukraine), Battelle-PMU*

2:45 PM WPM-D.2
Protection from Potential Exposure for the Chernobyl New Safe Confinement. *D.B. Shipler, V. Rudko, V. Batiy, D. Timmins, J.P. Schmidt, E.A. Schmieman; Battelle-PNNL, KSK (Ukraine)*

Wednesday

3:00 PM **WPM-D.3**
Chernobyl Deconstruction ALARA Analysis. *D.B. Shipler, V. Batiy, L. Povlovsky, J.P. Schmidt, E.A. Schmieman; Battelle-PNNL, KSK (Ukraine)*

3:15 PM **WPM-D.4**
Chernobyl New Safe Confinement Construction ALARA Analysis. *D.B. Shipler, V. Batiy, L. Povlovsky, J.P. Schmidt, V. Rudko, E.A. Schmieman; Battelle-PNNL, KSK (Ukraine)*

3:30 PM **WPM-D.5**
Air Condensation of the Chernobyl New Safe Confinement. *Y. Onishi, S.T. Yokuda, O.V. Voitsekhovitch, M.J. Zheleznyak; Battelle, Ukrainian Institute of Hydrometeorology, Institute of Mathematical Machines and System Problems*

3:45 PM **BREAK**

4:15 PM **WPM-D.6**
Environmental Assessment of the New Safe Confinement for Chernobyl. *D.A. Neitzel, E.A. Schmieman, M.J. Zheleznyak, O.V. Voitsekhovitch; Pacific Northwest National Laboratory, Institute of Mathematical Machines and System Problems, Ukrainian Institute of Hydrometeorology*

4:30 PM **WPM-D.7**
Off-Site Radiation Accident Analyses for the Chernobyl New Safe Confinement. *J.V. Ramsdell, Jr., B.A. Napier, D. Timmins; Battelle*

4:45 PM **WPM-D.8**
Radionuclide Migration in Surface Water and Groundwater. *Y. Onishi, C.R. Cole, M.J. Zheleznyak, S.L. Kivva, N. Dzijuba, O.V. Voitsekhovitch; Battelle, Institute of Mathematical Machines and System Problems, Ukrainian Institute of Hydrometeorology*

5:00 PM **WPM-D.9**
Assessing New Safe Confinement Facility Related Accident Impact on Chernobyl Area Flora and Fauna. *L.L. Cadwell, B.A. Napier, D.A. Neitzel, M.J. Zheleznyak; Pacific Northwest National Laboratory, Institute of Mathematical Machines and System Problems*

5:15 PM **WPM-D.10**
Assessment of the Social and Economic Impacts Resulting from Construction of the Chernobyl New Safe Confinement Shelter. *J.A. Jaksch; Pacific Northwest National Laboratory*

2:30 - 5:30 pm **Sheffield/Hampton**

WPM-E: DOE NESHAPs Meeting - Radioactive Air

Co-Chairs: Gustavo Vasquez and Matthew Barnett

Panel Discussion/Open Discussion

2:30 - 5:00 pm **Royal Palm 5/6**

CRSO Wednesday Afternoon Session

2:30-5:00 PM **CRSO Presentations**
See the CRSO website, www.crso.org, for updated information

5:30-10:00 PM **CRSO Night Out**
Dinner at the San Diego Zoo

5:30 - 6:30 pm **Pacific 1**

HPS Business Meeting

6:30 - 7:30 pm **TBD**

**Radiological Emergency Medical
Management - Train the Trainer Workshop**
(See page 15 for details)

ADJUNCT TECHNICAL MEETING

6:30 - 8:30 pm **Pacific 3**

Aerosol and Other Radiation Measurements
(all presentations are 15 minutes)

Chair: Morgan Cox

Evaluation of Continuous Air Monitors (CAMs) for LANL. *Y.S. Cheng, Y. Zhou, J. Gao, D. Barringer, D.L. Wannigman, J.T. Voss; Lovelace Respiratory Research Institute (LRRRI), Los Alamos National Laboratory (LANL)*

Operational Experience with the Eberline Alpha-7L CAM at LANL. *J.T. Voss; Los Alamos National Laboratory (LANL)*

Failure Modes and Effects Analysis for the Alpha-7L CAM. *D.L. Wannigman, R.C. Stupka; Los Alamos National Laboratory (LANL)*

A Comparison Study of Personal Alpha Cams. *J.T. Voss; Los Alamos National Laboratory (LANL)*

Performance of the PRESCILA Portable Neutron Monitor. *R. Wishau, M. Dempsey, J. Elliott; Los Alamos National Laboratory (LANL)*

Roundtable Discussion Including These Topics: a) a Review of Aerosol Monitoring Standards; b) the Need for New and Different CAMs; c) Non-Radioactive Applications for Aerosol Monitoring; 4) Lessons Learned in Aerosol Monitoring.

Thursday

7:15 - 8:15 AM

CEL-7

Room: Pacific 1

Non-Ionizing Radiation (NIR) Standards Update. *J. Leonowich; Pacific Northwest National Laboratory*

7:15 - 8:15 AM

CEL-8

Room: Pacific 2

Update on New Radionuclide Therapies in Nuclear Medicine. *D.R. Fisher; Pacific Northwest National Laboratory*

8:30 am – Noon

Golden Ballroom

THAM-A: Medical Health Physics

Co-Chairs: Marcia Hartman and Ruth McBurney

8:30 AM

THAM-A.1

Video-Assisted Short-Term Radiation Exposure Assessment. *Y.C. Lai, Y.C. Huang, Y.W. Chen; Kaohsiung Medical University*

8:45 AM

THAM-A.2

Time Analysis Study Comparing Nuclear Medicine Technologists' Radiation Exposure from ¹⁸F FDG Exams on a Modified NaI Scanner with Dedicated Full Ring BGO Detector System. *K. Nelson, P. Koropova, D. Aloszka; Mayo Clinic Jacksonville*

9:00 AM

THAM-A.3

Monitoring of Air Effluents from [¹⁸F][FDG] Manufacturing at a PET Nuclear Pharmacy. *W.R. Moroney, A.K. Dhar; PETNET Pharmaceuticals, Inc.*

9:15 AM

THAM-A.4

Application of VIP-Man Tomographic Model for X-Ray Imaging Quality Study. *M. Winslow, X.G. Xu, C. Shi, W. Huda, K. Ogden, C.H. Kim; Rensselaer Polytechnic Institute, SUNY Upstate Medical University*

9:30 AM

THAM-A.5

A Comparison of Newborn Stylized and Tomographic Models for Dose Assessment in Pediatric Radiology. *R.J. Staton, F.D. Pazik, J.C. Nipper, J.L. Williams, W.E. Bolch; University of Florida, US Food and Drug Administration*

9:45 AM

THAM-A.6

An Analysis of the Current State of MRI Quality Assurance Regulation in the United States and the Effect of the Increasing Regulatory Burden on the Health Care Industry. *W.G. West, K.J. Kearfott; University of Michigan*

10:00 AM

THAM-A.7

Pediatric Head Computerized Tomography in Pediatric Patients. *J.L. West; National Institute of Health*

10:15 AM

BREAK

10:45 AM

THAM-A.8

Construction of a Tomographic Computational Model of a 9-Month Old and its Monte Carlo Calculation Time Comparison between the MCNP4C and MCNPX Codes. *C. Lee, W.E. Bolch; University of Florida*

11:00 AM

THAM-A.9

S-Value Scaling using Spongiosa Volumes to Improve Patient-Specific Dosimetry. *J.M. Brindle, A.P. Shah, C.J. Watchman, D.A. Rajon, W.E. Bolch; University of Florida*

11:15 AM

THAM-A.10

CT Shielding Design - New Findings and a Common Sense Approach. *T. Yoshizumi; Duke University Medical Center*

11:30 AM

THAM-A.11

Safety Measures Surrounding Encapsulated Radioiodine Therapy Doses. *A.C. Coan, W.B. Bass, Jr., R.J. Heath, Jr., J.R. Lalisian, T.S. Rorrer, D.R. Anderson; University of Alabama at Birmingham*

11:45 AM

THAM-A.12

The Effect of Digital Image Manipulation on Patient Dose Utilizing Threshold Contrast as a Measure of Image Quality. *D.E. Hintenlang, M.M. Arreola, C.D. Pitcher; University of Florida*

8:30 am - Noon

Pacific 1

THAM-B: MARSSIM

Co-Chairs: Colleen Petullo and Carl Gogolak

8:30 AM

THAM-B.1

Multi-Agency Radiation Survey & Site Investigator Manual (MARSSIM) Overview & Update. *C. Petullo; USPHS detailed to US Environmental Protection Agency/MARSSIM Workgroup Chairperson*

8:45 AM

THAM-B.2

MARSSIM Website—Contacts, Clarifications, and Implementation. *R.A. Meck; US Nuclear Regulatory Commission*

9:00 AM

THAM-B.3

Overview of MARSAME. *K.A. Klawiter; US Environmental Protection Agency*

9:15 AM

THAM-B.4

Overview of the Multiagency Radiation Survey and Assessment of Subsurface Soils (MARSASS) Manual. *D.F. Caputo; US Air Force*

9:30 AM

BREAK

10:00 AM

THAM-B.5

Using MARSSIM Scenario B. *C.V. Gogolak; US Department of Energy/Environmental Measurements Lab*

Thursday

10:30 AM **THAM-B.6**
Pushing the MARSSIM Implementation Envelope. *S.S. Hay, T.R. Mason; Cabrera Services, Inc.*

11:00 AM **THAM-B.7**
Lessons Learned During Implementation of MARSSIM from an Independent Verification Perspective. *E.W. Abelquist; Oak Ridge Associated Universities*

11:30 AM **Panel Discussion**

8:30 am – Noon **Pacific 2**

THAM-C: Instrumentation

Chair: Ken Krieger

8:30 AM **THAM-C.1**
Portable Liquid Scintillation Analysis - Improving HP Support of Operations. *S. Langish, K.R. Rule, C.A. Gentile, A. Planeta; Princeton Plasma Physics Lab*

8:45 AM **THAM-C.2**
Real-Time Environmental Radiation Monitoring at Indian Point. *L.A. Glander, T.F. Burns; Entergy, Indian Point Energy Center*

9:00 AM **THAM-C.3**
Prototype Tests of Gamma Spectroscopy Systems for Near-Real-Time Ambient Air Monitoring. *R.C. Lowry, D. Saunders; US Environmental Protection Agency National Air & Radiation Env. Lab.*

9:15 AM **THAM-C.4**
In Situ Tritium Probe for Effluent and Ground Water Monitoring. *J.C. Stutz, C. Hull; University of Nevada – Las Vegas*

9:30 AM **THAM-C.5**
Design of an Inexpensive, Flexible, Shielded Cave for Environmental Radioactivity Measurements. *C.P. Henley, K.J. Kearfott, W.G. West, A.F. Kalchik, D.A. Granzow, J.T. McDonald; University of Michigan*

9:45 AM **THAM-C.6**
Density and Moisture Calibration Adjustments of a Field Laboratory Gamma Spectroscopy System. *K.D. Anderson, S.G. Zoller; Environmental Chemical Corporation*

10:00AM **BREAK**

10:30 AM **THAM-C.7**
Evaluation and Calibration of a High-Range Alpha Ion Chamber. *R.L. Morris, D.E. Hankins, B.P. Smith; The Alpha Group & Associates, LLC*

10:45 AM **THAM-C.8**
Evaluation of the Radiation Protection and Dosimetric Features of a New Automatic Needles Loading System. *J. Morrier, M. Chretien, N. Varfalvy, L. Beaulieu; CHUQ - Hotel-Dieu Quebec Hospital*

11:00 AM **THAM-C.9**
Application of the Monte Carlo Methods to Determine the ²³⁹Pu and ²⁴¹Am Content in the Wound. *A.E. Schadilov, S.A. Sypko; Southern Ural Biophysics Institute*

11:15 AM **THAM-C.10**
Two Detectors or Four? *G.H. Kramer, S.A. Allen, T.Y. Lee; Human Monitoring Laboratory, Health Canada, Cameco Corporation, Korea Atomic Energy Research Institute*

11:30 AM **THAM-C.11**
An Evaluation of the Kearney Fallout Meter (KFM), a Radiation Detector Constructed of Commonly Available Household Materials. *M.A. Israetel, K.J. Kearfott, J.T. McDonald, D.A. Granzow, W.G. West, R.B. Gunnett; University of Michigan*

11:45 AM **THAM-C.12**
Portable Thermal and Epithermal Neutron Sensor. *S. Mukhopadhyay, H. McHugh; Bechtel Nevada RSL-Nellis*

8:30 - 10:00 am **Pacific 3**

THAM-D: Sampling Airborne Nuclear and Biological Contaminants

Co-Chairs: Yung Sung Cheng and Andrew McFarland

8:30 AM **THAM-D.1**
"When Smoke Gets in Your Eyes" - Development of a Virtual Impactor ECAM. *J.C. Rodgers, Los Alamos National Laboratory*

8:45 AM **THAM-D.2**
Evaluation of Two Continuous Air Monitors. *Y. Zhou, Y.S. Cheng, J. Gao, D. Barringer, D.L. Wanningman, J.T. Voss; Lovelace Respiratory Research Institute, Los Alamos National Laboratory*

9:00 AM **THAM-D.3**
Development of a Massive Air Sampler for Collecting Radionuclide Particles. *Y.S. Cheng, W.C. Su, D. Barringer, Y. Zhou, A.R. McFarland, Y. Hassan; Lovelace Respiratory Research Institute, Texas A&M University*

9:15 AM **THAM-D.4**
Development of a Bioaerosol Collection System for Mail Sorting Machines. *M.A. Richardson, C.A. Ortiz, J.S. Haglund, A.R. McFarland; Texas A&M University*

9:30 AM **THAM-D.5**
Contaminant Mixing and Aerosol Deposition in Rectangular Stacks and Ducts. *G. Yesilyurt, S. Hari, A. Gupta, Y.A. Hassan, A.R. McFarland; Texas A&M University*

Thursday

9:45 AM **THAM-D.6**
Outdoor Biological Aerosol Sampling for a Biological Agent Detection System. *T.R. Wehner, W.L. May, M.J. Brown, M.D. Williams, G.E. Streit; Los Alamos National Laboratory*

8:30 - 11:30 am **Pacific 6/7**

THAM-E: Experiences with Academic Accreditation of Health Physics Programs Under ASC ABET 2000

Co-Chairs: Jim Tarpinian and Paul Ziemer

8:30 AM **THAM-E.1**
ABET and Health Physics Accreditation. *K.B. Aberle, D. Hodge; Accreditation Board for Engineering and Technology, Inc.*

9:00 AM **THAM-E.2**
Accreditation of Academic Health Physics Programs - the Program Evaluators' Perspective. *C.E. Roessler, H.R. Meyer, F.M. Cummings, J.E. Martin; University of Florida, Emeritus, MFG, Inc., Idaho Nuclear Engineering Laboratory, University of Michigan, Emeritus*

9:30 AM **THAM-E.3**
The Health Physics ABET Accreditation Experience at the University of Nevada, Las Vegas. *M.J. Rudin; University of Nevada - Las Vegas*

10:00AM **BREAK**

10:30 AM **THAM-E.4**
The Health Physics ABET Accreditation Experience at Oregon State University. *K.A. Higley, A.C. Klein, J.N. Reyes, J.F. Higginbotham, D.M. Hamby, T.L. Culver; Oregon State University*

11:00 AM **THAM-E.5**
The Idaho State University ABET Accreditation Experience. *R.R. Brey; Idaho State University*

8:15 am - 4:30 pm **Royal Palm 5/6**

CRSO Thursday Session

8:15-10:00AM **CRSO Presentations and Breakouts**
Decommissioning on Campuses, Training Programs

10:00-10:15 **Break**

10:15-11:45AM **CRSO Presentations and Breakouts**
Security of Campus Labs, Campus Waste

11:45 AM **CRSO Business Meeting**

2:30 PM **CRSO Old Goat Awards**

2:45-4:30 PM **CRSO Presentations**
See the CRSO website, www.crso.org, for updated information

AAHP Courses

Saturday, July 19, 2003, 8:00 am-5:00 pm

Each Course is worth 16 CECs

AAHP COURSE 1

RESPIRATOR PROGRAM ELEMENTS AND REQUIREMENTS OF THE NEW NRC & OSHA REGULATIONS. *Darrell Bevis, Bevis Respirator Consultants*

This course/discussion is specifically designed to identify the requirements for establishment and maintenance of a complete compliance respirator program per the new NRC and OSHA regulations. The new regulations published as Final Rules in February, 2000, and January, 1998 respectively, make considerably more specific requirements for compliance, and specify new methodologies for performing various program functions than the prior regulations. The new NRC regulations are also accompanied by a new revision of Regulatory Guide 8-15. Discussion will include, within the time constraints, guidance for compliance with all of the new requirements.

AAHP COURSE 2

RESPONDING TO LARGE-SCALE DISPERSION OF RADIOACTIVE MATERIAL. *Carson A. Riland, Bechtel Nevada, and William G. Rhodes III, Sandia National Laboratories*

The course presents the basics for a large-scale Consequence Management (CM) response to the spread of radioactive material. The material is geared toward off-site response activities, including building up to and establishing a Federal Radiological Monitoring and Assessment Center (FRMAC). A general agenda of topics includes:

An Overview of Consequence Management Activities for Radiological Emergency Response; Atmospheric and Effects Modeling; Airborne Measurements; Ground Monitoring and Sampling; Laboratory Analysis of Samples; Dose Assessment; Responder Health and Safety; and Preparedness Issues and Problem Areas.

The majority of material presented is applicable for any level of response. Though some of the material is provided from

a national perspective, local, state, and regional response participants will find it useful to have a more complete understanding of Federal assets available to respond to events.

The presenters have been involved in numerous Department of Energy Radiological Emergency Response programs and activities for a number of years and have been actively involved in the subject-matter areas.

*DOE/NV/11718—789. Work supported by the U. S. Department of Energy, Nevada Site Office, under Contract DE-AC08-96NV11718

AAHP COURSE 3

MATERIALS AND METHODS FOR TRAINING RESPONDERS TO RADIATION EMERGENCIES. *Allen Brodsky, SAIC, Marlow Stangler and Brooke Buddemeier, LLNL*

This course is a series of presentations from health physicists experienced in training, preparing, and responding to all kinds of incidents and accidents involving the exposure of human populations to the uncontrolled release of radioactive materials. The experience of the presenters ranges from the release of large amounts of radioactivity in fallout from nuclear weapons to the release of smaller amounts that have been ingested or inhaled by limited numbers of persons from radioactive material accidents. Many principles learned from past releases are applicable to terrorist attack scenarios. In addition to the instruction and demonstration of teaching methods and training techniques, the instructors will provide handouts and training materials drawn from the vast literature and their experience, so that attendees can take with them materials ready for use in their own chapter or individual training efforts. Some of these materials have been selected by individuals currently involved in responder training as well as the Society's homeland security program.

Professional Enrichment Program

Sunday, July 20 Through Thursday, July 24, 2003

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

On Sunday, July 20, a series of 27 courses will be offered between 8:00 am - 4:00 pm.

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

Registration for each two-hour course is \$60 and is limited to 60 attendees on a first-come, first-served basis. Those whose registrations are received before the pre-registration deadline will be sent confirmation of their PEP course registration.

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

the start of the session to allow for completion of ticket processing.

Please Note!!

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

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

Refund Policy

Requests for PEP refunds will be honored if received in writing by June 27. All refunds will be issued AFTER the meeting. Exceptions will be handled on a case by case basis.

1-A Department of Energy's Transportation Emergency Preparedness Program (TEPP) Train-the-Trainer Course, Part I. B. Buddemeier; Lawrence Livermore National Laboratory

The US Department of Energy's Transportation Emergency Preparedness Program (TEPP) Modular Emergency Radiological Response Transportation Training (MERRTT) is now in its second generation (as of 2002). These materials are excellent training for first responders who may have to respond to a radiological incident. Filled with original graphics, photos, movies, student materials, and exercises, this program was designed with the assistance of first responder training experts in order to be seamlessly integrated into fire department and HAZMAT training programs.

Those that successfully complete this TEPP MERRTT Train-the-Trainer course will be given all of the presentations, student guides, instructor manuals, practical exercises, and tests electronically so that they can incorporate the material into your own training efforts.

Here are some of the modules that are in the program;

- Radiological Basics
- Biological Effects of Ionizing Radiation
- Hazard Recognition
- Initial Response Actions
- RAM Shipping Packages
- Patient Handling
- Notifications and Resources
- Scene and Incident Control
- Radiological Terminology and Units
- Radiological Instrumentation
- Assessing Package Integrity
- DOE & WIPP Shipment Concerns

Note: This is usually a 2 day course; however special dispensation has been made for Health Physicists. In order to become a certified instructor and receive the TEPP MERRTT materials, BOTH sessions must be taken.

1-B Medical Laser Safety; K. Barat; Lawrence Livermore National Laboratory

This presentation is designed to give a basic overview of laser safety in a medical setting. It will present issues and difficulties found with addressing laser safety in a medical arena, to include: The elements of a medical laser safety program as discussed in ANSI Z136.3 Standard for the Safe Use of Lasers in Health Care Facilities; laser safety as it affects the patient, direct and ancillary medical staff; and a review of a number of medical laser accidents. Attention will be given to medical non-beam hazards (i.e. smoke removal) and control measures. The program will be useful for those involved in a medical setting such as the University hospital, hospital or clinic.

1-C Radioactive Materials Transportation Review - Part 1 of Two Part Course. S.M. Austin; CSI-Radiation Safety Academy

This session is Part 1 of a two-part series. This session will review Nuclear Regulatory Commission and Department of Transportation regulations concerning the transportation of radioactive materials. During this first part we will review DOT and NRC requirements for training of HAZMAT

employees, classification of hazardous materials, DOT and NRC exemptions, normal form and special form radio active materials, limited quantities of materials and articles and instruments, low-specific activity shipments (LSA-I, LSA-II, LSA-III), and surface contaminated objects (SCO-I and SCO-II). We will review requirements for radioactive material packagings, design requirements for Type A packages, and labeling of radioactive material packages.

1-D U.S. Environmental Protection Agency's Risk Assessment Methodology for Radioactive Contaminants. A. Fellman; CSI-Radiation Safety Academy

Under the Superfund law, the U.S. Environmental Protection Agency (EPA) must establish the existence of an unacceptable risk to human health and/or the environment prior to authorizing the expenditure of resources for site remediation. Absent such a risk, a site is ineligible for cleanup under the Superfund remedial program.

EPA has published several Risk Assessment Guidance (RAGs) documents which detail the approved methodology for performing quantitative risk assessments at Superfund sites. This PEP session will consist of a review of the major elements of a risk assessment as described in the RAGs methodology, including identification of radionuclides of concern, determination of exposure point concentrations, and analysis of environmental pathways, future use scenarios, and exposure pathways. The various sources of uncertainty will also be discussed.

Students should bring a calculator to this PEP session. During the second hour, students will be asked to work (in groups) on a sample problem to evaluate the magnitude of risk posed by radionuclide contamination of soil and groundwater.

1-E Detection and Decision at Low Total Counts. J.L. Alvarez; Auxier & Associates

Detection and decisions are usually based on normal (Gaussian) statistics. Binomial or Poisson statistics may be more appropriate when the total counts are low (well less than 100). The difference from background for low total counts is not Gaussian so the standard definition of detection may not be applicable. A decision based on detection or a given confidence level may be poorly founded or difficult to explain when the data contain negative values.

A review of Gaussian, Poisson, and binomial distributions will be presented as well as the standard detection limits methods and formulae. A method of Poisson detection limits will be introduced. A routine for calculating Poisson confidence intervals at low total counts using EXCEL visual basic will be presented and is available as a user defined function.

Making a decision requires asking a question then collecting enough data to support the decision. Methods of determining 'enough' will include a Bayesian approach to analyzing data as it is collected for radiological surveys. Propagation of error for single sample decisions such as investigation of intake or dose assignment in internal dosimetry will be discussed. Examples will be limited to survey data and internal dosimetry but the techniques are generally applicable to low total counts.

1-F The Art and Science of “Selling” Your Radiation Safety Program. R.J. Emery; University of Texas Health Science Center at Houston

Ask any experienced practicing radiation safety professional and they will likely tell you that the ultimate success or failure of any program is contingent upon the ability to effectively “sell” its attributes. Radiation safety professionals are constantly trying to persuade, induce, convince, affect, impress, convert, discourage, or prompt actions. We must be able to “sell” ourselves to gain employment, start new initiatives, or successfully interact with regulatory agencies. Although salesmanship is an essential skill for the profession, training in this area is not normally included in our academic or continuing education curricula. To cultivate an awareness of the importance of sales and marketing skills in our profession, this presentation will serve to answer some very basic, but essential questions, such as: what are we “selling”, who are we “selling” to, and how do we go about “selling” effectively.

1-G Fundamentals of Preparing ANSI and IEC Standards for Radiological Instruments. M. Cox, M. Johnson; Santa Fe, New Mexico, Pacific Northwest National Laboratory

In this presentation the authors offer well over sixty years of combined experiences in the development of standards for health physics instruments, as well as in discussing performance testing such instruments versus appropriate standards. This review includes a brief look at some relevant current standards, the origin and need for their development, and their current status and impacts, domestic and international, on currently available instrumentation. Some details of instrument testing are discussed. The authors summarize the “drivers” for standards, both American National Standards Institute (ANSI) and International Electrotechnical Commission (IEC) types. The fundamental types of drivers include regulatory, technological and commercial. Then the presentation proceeds into the “heart and soul” of standards with a thorough view of the construction of standards and their development process. This is an interactive presentation requiring audience participation. This work introduces another standards presentation covering the current status of ANSI and IEC standards for health physics instrumentation.

1-H How to Prepare for the ABHP Exam, with Emphasis on Part II. P.S. Stansbury; Pacific Northwest National Laboratory

This PEP course is for individuals preparing for the American Board of Health Physics (ABHP) certification exam. It is aimed at both the individuals planning to take a formal review course and those who will prepare via self-study. The course covers what books and resources to use, what problems to work, how to organize information, and strategies for taking Parts I and II. In addition, key mathematical concepts, such as the exponential equation and equilibrium, which are used in numerous different ways to solve applied health physics problems, are reviewed and illustrated.

*Pacific Northwest National Laboratory is operated for the U.S. Department of Energy by Battelle under Contract DE-AC06-76RLO 1830

1-I Physics, Health Physics, and Applications of Backscatter X-Ray Imaging. D.J. Strom, J. Callerame, Pacific Northwest National Laboratory, American Science and Engineering, Inc.

The course will cover how x-ray backscatter works (reflection as opposed to transmission), the physics of Compton backscatter, what the physics tells about which atomic numbers are preferentially imaged, as well as effects of densities and thickness. We will discuss what kinds of x-ray generators (x-ray tube vs. linac) and power supplies are used, the accelerating potential and beam current. We will present the x-ray spectra of incident beams, tradeoffs between penetration and backscatter optimization, and detector capabilities; ideal and practical spectra of scattered beams. Tradeoffs related to beam size, shape, filtration, and collimation are presented. The duration and patterns of exposure scan are described. Shielding and collimation of the x-ray generator, and image receptors are addressed. Doses to containers, cargo, operators and nearby members of the public are given for cargo scanning systems, as well as “dose” (numbers of photons) needed at the image receptor. The dose values are placed in perspective in terms of risks, benefits, frequency of exposure, and ISO 14001 considerations. Operational radiation protection is outlined. Image considerations, such as types of image receptors, image resolution, image processing, electronics, and image storage and retrieval are presented, along with the ancillary use of image receptors to detect radioactive sources. We will present applications of backscatter x-ray technology to homeland security, alone and in conjunction with single or multi-energy transmission radiography equipment in the detection of explosives, contraband, and weapons for both cargo and people. We will list advantages and limitations, privacy issues, and future developments.

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2-A Department of Energy's Transportation Emergency Preparedness Program (TEPP) Train-the-Trainer Course, Part II. B. Buddemeier; Lawrence Livermore National Laboratory

See abstract for PEP Course 1-A.

2-B Developmental and Reproductive Risks of Ionizing Radiation, EMF and Sonography to the Pregnant Woman and Her Fetus. R. Brent; Jefferson Medical College of Thomas Jefferson University, and duPont Hospital for Children

The term "radiation" evokes emotional responses and fears from lay persons and professionals, especially when it is associated with radiation exposures during pregnancy. Yet in the field of ionizing radiation, we have a better understanding of the biologic effects and the reproductive risks of ionizing radiation than for any other environmental hazard. The human and animal data support the conclusion that the threshold dose for the production of congenital malformations, fetal growth retardation, severe mental retardation and abortion (deterministic effects) exceeds the exposures occurring in the vast majority of diagnostic radiological procedures. Whether there exists a linear or quadrilinear dose-response relationship for the risk of stochastic phenomena; namely, the induction of genetic diseases and cancer, from exposure to the fetus has not been determined. But, it is obvious that the risks of radiation induced genetic disease and cancer from diagnostic radiological exposures to the developing embryo are far below the spontaneous occurrence of genetic and malignant diseases. With regard to the overall risk of reproductive disease, it is important to be aware of the frequency of human reproductive failures. In that, 15% of human embryos abort, 2.7% to 3.0% of infants have major malformations, 2% of infants have serious central nervous disease, 4% have fetal growth retardation, and 8% to 10% have early- or late-onset genetic disease. The maximal increased risk attributed to a 0.05 Sv acute exposure is zero for deterministic effects. The risk from 0.05 Sv exposures for stochastic phenomena are far below the spontaneous risk of cancer and genetic disease. Thus, the present maximal permissible exposures for pregnant women from diagnostic radiological procedures are extremely conservative. Medically indicated diagnostic radiological procedures are appropriate for pregnant women, and there is no justification for terminating a pregnancy in women exposed to 0.05 Sv or less because of the radiation exposure. On the other hand, diagnostic radiological studies that can be replaced by ultrasound or other procedures should be avoided simply because the unnecessary use of radiology procedures is not good medical practice. The newer concerns about the "high doses" received from CT scan exposures will also be discussed with regard to their reproductive risks. Embryonic and fetal exposures to radionuclides used in clinical medicine present variable risks, depending on the exposure and radionuclide. The reproductive risk from EMF exposures and clinical sonography will also be discussed. Counseling women of reproductive age should be based on sound information about the risks of radiation exposure. There should be ample time for questions and discussion.

2-C Radioactive Materials Transportation Review - Part 2 of Two Part Course. S.M. Austin; CSI-Radiation Safety Academy

This session is Part 2 of a two-part series. This session will continue the review Nuclear Regulatory Commission and Department of Transportation regulations concerning the transportation of radioactive materials begun in the previous PEP session. This session will review DOT hazard communication requirements for marking and labeling packages, placarding vehicles, shipping paper, and emergency response requirements. A review of special requirements for shipping limited quantities, instruments, articles, LSA and SCO materials is included. Also included is a review of hazardous material descriptions applicable to radioactive material shipments, carrier requirements, and special requirements for different modes of conveyance.

2-D How to Deal With Fears of Radiation and Nuclear Terrorism – Part I, Understanding the Fear Factor. R. Johnson; CSI-Radiation Safety Academy

Health physicists may find that the greatest challenge in response to nuclear terrorism is dealing with people's fears rather than technical issues. Although we may have devoted our lives to dealing with the technical aspects of a nuclear incident, how well prepared are we to deal with fears and terror? Radiation is an ideal choice for inciting hysterical public reactions, because it invites fears, perceptions, and images of terrible consequences. The public commonly links the word "radiation" to cancer, death, harm to children and future generations, and damage to property. The prospects of exposure to radiation are enough to trigger widespread fears and dread of radiation that could be called radiation phobia. Phobic persons will have fearful expectations of extreme consequences related to the question, "What if?" They will then make decisions and react according to their fears of the consequences of "what if" rather than "what is."

As health physicists we are trained to tell concerned people "what is" about a nuclear incident. However, telling a phobic person "what is" may NOT lead them to different actions, conclusions, or demands for protection. They may not believe your best data on "what is" and may doubt your motivation for telling them something contrary to their own fears and beliefs. Dealing phobias and terror requires dealing with the underlying fears and the images that fuel those fears. These fears and images can be identified by the question "What's so bad about that?" This question has to be used with sensitivity, however, and should not be asked when a person is in the midst of a fearful reaction. You could possibly ask "What do you believe will happen if you are exposed to radiation?" The answer to these questions is often about fearful images of consequences, such as dying, loss of health, loss of self, loss of control, loss of income, loss of family, or loss of employment, etc. The most effective response to terror and fears may be to address the images of losses that phobic persons anticipate, rather than the technical aspects of a nuclear incident.

2-E The Effects of Nuclear Weapons and Radiological Dispersive Devices. *J.A. Auxier, J.L. Alvarez; Auxier & Associates*

Policy and planning for terrorist attacks using nuclear weapons or explosively dispersed radiological sources requires knowledge of the effects of these devices. The likely scenario for responding to an attack includes the blast damage and casualties and the radiological casualties and associated hazard of the contamination zone.

The effects of nuclear weapons has been known since the bombings of Hiroshima and Nagasaki and the above ground nuclear tests designed to study yields and effects. These effects depend upon the size of the weapon (explosive yield) and the location of the weapon in relation to the surface of the earth (surface or air burst). Casualties and the treatment and rescue of survivors will depend upon distance from the center of the detonation.

Explosive dispersal of radiological sources is similar in many ways to a nuclear device, except size. Casualties and the treatment and rescue of survivors will depend upon distance from the center of the detonation. Explosive dispersal is not as easy as it may sound or be claimed. Predicting the dispersion of the radioactivity for planning depends upon predicting the ingenuity of the design. The most likely guess is that explosives would not be used for dispersal of a very large (greater than a few curies?) source, but that radioactivity might be added to a large explosive for confusion and confounding.

Interdiction should be stressed as prevention instead of cure. Detection of radioactive sources of sizes that would introduce considerable confounding is relatively easy.

2-F Internal Dose Calculations in Nuclear Medicine. *M. Stabin; Vanderbilt University*

The recent emphasis on the use of nuclear medicine therapy agents against many forms of cancer has brought about an increase in the need for reliable and clinically meaningful internal dose calculations. Traditional mathematical model-based internal dose calculations, as developed by the Medical Internal Radiation Dose (MIRD) Committee of the Society of Nuclear Medicine, are still in widespread use for diagnostic and therapeutic agents, but strong trends are developing toward more patient-specific dose calculations. Adjustments to traditional dose calculations based on measured patient-specific data are routinely made in therapy trials, including marrow activity (based on measured blood parameters) and organ mass (based on volumes measured by ultrasound or Computed Tomography (CT)). A more aggressive approach uses truly patient-specific models developed from 3D patient image data, fusing CT or Magnetic Resonance data (to describe patient anatomy) with Positron Emission Tomography or Single Photon Emission Computed Tomography data (to describe the spatial distribution of the radioactive tracer and its biokinetic behavior). This requires substantial attention to image quality and quantification methods, but is being applied in a number of centers around the world. More data and resources are also becoming available through the internet, and the power and speed of available tools is increasing rapidly. This program will give an overview of current tools and common practice in internal dose as-

essment in nuclear medicine, describing both diagnostic and therapeutic applications, but with an emphasis on the latter. Experience with internal dose calculations for several therapeutic agents will be described.

2-G ICRP 66 Respiratory Tract Model. *H. Cember; Purdue University*

The ICRP 30 three compartment model of the human respiratory tract was the basis for the 1977 ICRP recommendations for safety standards for inhaled radioactive aerosols on which the current NRC limits in 10 CFR 20 are based. This model was designed for calculating only the average dose from inhaled aerosols to blood-filled lungs of an adult reference person. Since then advances in knowledge of the respiratory system's structure and physiology, the kinetics of deposition and clearance of particles, and the relative radiation sensitivity of the different tissues and cell lines in the respiratory tract led to the development of a more comprehensive physiologically-based pharmacokinetics (PBPK) model.

The new ICRP 66 model consists of three sub-models: One for deposition of particles and gases, one for clearance from the respiratory tract, and a third one for radiation dosimetry. The deposition model describes the fractional deposition of inhaled aerosols in each of five anatomical compartments of the respiratory tract. The ICP 30 three compartment model deals only with inhaled aerosols. The new five-compartment model deals with aerosols and also with the deposition and absorption of inhaled gases and vapors. The clearance sub-model describes the kinetics of removal and redistribution of the deposited particles; and the dosimetry sub-model allows the evaluation of radiation doses to each of six different target tissues that may be at risk from inhaled radioactivity. The details of the five-compartment model and its sub-models will be presented.

2-H How a Non-Profit Organization Can Put On a Course To Help People Prepare for the ABHP Exam. *P.S. Stansbury; Pacific Northwest National Laboratory*

This PEP course explains how an HPS chapter or other non-profit organization can put on a review course to help those preparing for the American Board of Health Physics (ABHP) certification exam. The information presented is derived from the highly successful 14-week, 52-hour course offered by the Columbia Chapter. This PEP course covers a course structure that emphasizes problem solving, subject areas for study, textbook and other resource recommendations, and budget and financial details. The review course described here is aimed at those preparing to pass Part II of the exam. However, the review course has proved useful to those taking Part I, and there are special review course activities for those that are planning only to take Part I.

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2-I Review of Current CT Technology and CT Dosimetry in Modern CT Scanners. T. Yoshizumi; Duke University

This is an introductory course for audiences with no special background in Computed tomography CT. CT has been revolutionized by the technical advances in the last ten years. Major advances include spiral CT in 1989 and multi-detector system in 1998. During this period of technologic development, the scope of clinical CT applications has expanded from diagnosis, to cancer staging, to CT fluoroscopy, to coronary artery calcium scoring, to treatment planning in radiation oncology, and to co-registration of images in combined PET/CT scanners. We just began to understand higher organ dose issues pertaining to multi-detector helical CT scanners.

This course will present:

- (1) A brief review of CT history;
- (2) A brief overview of recent technological advances in spiral CT and multi-detector CT;
- (3) A review of various dose indexes such as CTDI, weighted CTDI, and dose-length product (DLP);
- (4) A technical review of CT fluoro, cardiovascular CT, and associated dosimetry issues;
- (5) A review of various CT dose estimation methods including Monte Carlo method, DLP method, and direct measurements;
- (6) A review of current dosimetry issues in pediatric CT, CT fluoroscopy, coronary artery calcium scoring, and body CT;
- (7) Fetal dose consultation in pregnant women - important points to remember in doing fetal dose estimation;
- (8) A review of radiation risk issues from CT in recent months.

The student should expect to benefit from the course by gaining basic understanding of recent technological advances of CT, how to estimate organ doses from modern CT system, and more importantly where to look for information pertaining CT technology and CT dosimetry.

Sunday - 2:00 - 4:00 PM

3-A Department of Energy's WMD Radiological/Nuclear Awareness Train-The-Trainer Course. J. DiLorenzo, Bechtel Nevada (BN/CTOS), US Department of Energy (DOE) National Nuclear Security Administration Nevada Operations Office (NNSA/NV)

The Department of Justice (DoJ) and the Department of Energy (DOE) are proud to announce the development of a six hour WMD Radiological/Nuclear Awareness training for first responders. Using the Train-the-Trainer format, these educational materials will be available to Health Physicists who meet the prerequisites stated below and demonstrate the capability to effectively present the class.

This session is designed to finalize preparation for Health Physics professionals to deliver a six-hour Radiation Awareness Course, using a prepared lesson plan. Subjects include Introduction to Radiation, Health and Medical Effects, Recognition and Notification, and Rad/Nuclear Terrorism Overview. Each participant will have an opportunity to learn

the basics of platform presentation and classroom discussion for the Radiation Awareness Course as part of their training. This course is usually taught in a 2 day session, however special dispensation has been granted for Health Physics personnel who have successfully completed the TEPP train-the-trainer program as there is some overlap in these materials. Certified instructors will be given the instructional material tailored for the training of First Responders and Emergency Managers, including law enforcement agencies, fire departments, hazardous materials technicians, bomb squads, public health services, emergency medical service personnel, or other emergency management personnel.

Note: This is usually a 2 day course; however special dispensation has been made for Health Physicists. In order to become a certified instructor you will need to have successfully completed a TEPP MERRTT train-the-trainer session (also offered earlier in the day)

3-B Obtaining Laser Safety in the Research Setting. K. Barat; Lawrence Livermore National Laboratory

Laser safety in the research setting presents the greatest challenge to the laser safety officer. Laser safety in research setting in the United States is based on the control measures and guidelines set forth in the American National Standards Institute Standard Z136.1 "Safe use of Lasers". This standard established the position of laser safety officer (LSO). This individual is responsible for the implementation of and enforcement of laser safety policies and procedures in the work place. This presentation will touch on regulatory drivers that effect laser safety in the US and review ANSI controls, in particular suggested ways to obtain researcher cooperation to achieve the goal of laser safety. Suggestions will cover both administrative and engineering controls. A number of practical beam control approaches will be demonstrated. This course will be of value regardless of the size of the research community an LSO has to interact with.

3-C RCRA for the Health Physicist. W.V. Lipton; Fermi 2 Nuclear Power Plant

Many facilities which use radioactive material also generate waste that is defined as hazardous by the Resource Conservation and Recovery Act (RCRA). Since RCRA violations may result in substantial penalties, including criminal penalties for willful violations, it is important for a health physicist to be able to understand basic RCRA requirements, identify hazardous waste, assure that it is properly managed, and minimize future generation.

The objective of this presentation is to provide a professional health physicist with sufficient knowledge to identify potential sources of hazardous waste at his facility and obtain the assistance needed to assure that it is managed to meet RCRA and other applicable requirements.

Topics discussed include:

- Hazardous waste identification – solid waste; recycling exclusions; listed hazardous waste; characteristic hazardous waste; and mixture, derived from, and contained in rules.
- Generator storage requirements – facility requirements and time limits for conditionally exempt small quantity generators, small quantity generators, and large quantity generators.

- Selecting a transporter and TSDF.
- Generator shipping requirements – manifests, land disposal restrictions, characterization requirements, lab packs, and tracking requirements.
- Common wastes – spent solvents, metals, chlorinated fluorocarbons, used oil, and universal waste.
- Principles of waste minimization.
- State RCRA programs.
- Common pitfalls – living with strict and joint liability.

3-D How to Deal With Fears of Radiation and Nuclear Terrorism – Part II, Ten Practical Steps and Tools. R. Johnson; CSI-Radiation Safety Academy

The most important factor in dealing with reactions to radiation and nuclear terrorism is to recognize that fear is the driving force, not the technical circumstances of a nuclear issue. While data on the incident may be helpful, the way information is presented may be more important than the content. Fearful people want their fears heard and respected. They want to know if you care. This leads to the axiom, “People do not care how much you know, until they know how much you care.” They seek reassurance and they want the basis for their fears to go away. If their fear is about radiation, they may demand that all radiation be taken away, down to the last atom.

The ten steps or tools that will help you deal with fears of radiation include:

1. Define the topic, issue, situation, or communication need
2. Define your goal for radiation risk communication
3. Evaluate your natural communication style
4. Evaluate the communication preferences of your audience
5. Identify the fears and decide how to address them in your communication
6. Establish your social role and how you want to be seen
7. Decide how to position your communication for success
8. Decide how to present your message for greatest effectiveness
9. Evaluate and respond to feedback
10. Troubleshoot and revise your communication as needed to meet your goals.

The use of these tools will be demonstrated and opportunities will be provided for practice during the PEP session. Participants will be provided with a radiation risk communication checklist and troubleshooting guide.

3-E All You Wanted to Know About Tritium. R. Litman; Radiation Safety and Control Services

Analysis of environmental samples for tritium can be both straightforward and tricky. This presentation describes the chemistry of tritium that distinguishes it from other analytes. It is an isotope of hydrogen which makes its chemical separation processes analogous to those of ordinary hydrogen compounds, particularly water. Some of the interesting myths and truths about tritium will be discussed and related to the chemistry of hydrogen.

Each environmental matrix that contains tritium can have a slightly different method of collection/separation of tritium from the other materials in the matrix. Some traditional and unique methods of sample collection for tritium will be discussed. Some of the more interesting challenges are materials like soil, concrete and marine organisms.

As the single radioisotope of hydrogen it has a very simple nuclear decay. But this particular mode of decay also presents challenges to the analyst that is also described in the presentation. The different methods of analysis will be discussed and contrasted.

Radiation Quantities and Units: Their Evolution and Proper and Not Quite So Proper Usage and Applications.

3-F Implementation of the ICRP Publication 68 Series of Models and Dose Coefficients. C. Potter; Sandia National Laboratories

In 1994, the International Commission on Radiological Protection (ICRP) published a replacement of ICRP Publication 61. This volume included dose coefficients derived using the latest recommendations from ICRP Publication 60 and incorporating the ICRP Publication 66 respiratory tract model and newer metabolic models. Implementation of this publication requires intake retention fractions derived from those models used in the publication. Fractions for particulate inhalation were made available in the November, 2002 issue of Health Physics.

This PEP course will explain the use of these dose coefficients and intake retention fractions in internal dosimetry. Topics for discussion include: 1) models used and information provided in both publications, 2) techniques for derivation of intake retention fractions, and 3) use of the dose coefficients and intake retention fractions in both dose calculation and bioassay program development.

The target audience for this course is currently performing internal dosimetry calculations in an occupational setting and anticipating moving to the more current models. However, the material will be presented in such a manner that anyone with an interest in internal dosimetry can obtain information on current models and techniques.

*Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company for the United States Department of Energy’s National Nuclear Security Administration under contract DI-AC04-94AL85000.

3-G Status of Homeland Security Department Standards for Radiological Instrumentation. M. Cox; Santa Fe, New Mexico

This presentation is a review of the status of the four American National Standards Institute (ANSI) N42 Radiation Protection Instrumentation (RPI) draft standards being developed for radiological instrumentation for the Homeland Security Department. These standards include ANSI N42.32: Performance Criteria for Alarming Radiation Detectors for Homeland Security, chaired by Joseph McDonald, PNNL; ANSI N42.33: Portable Radiation Detection Instrumentation for Homeland Security, chaired by Morgan Cox, consultant; ANSI N42.34: Hand-held Instruments for the Detection and Identification of Radionuclides, chaired by Peter Chiaro,

ORNL; and ANSI N42.35: Evaluation and Application of Radiation Detection Portal Monitors for Use in Homeland Security, chaired by Brian Rees, LANL. The scope, purpose and some details of each of these standards will be discussed in this interactive review. Audience participation is a must in this case.

3-H Radiation Epidemiology for the Health Physicist. J.D. Boice, Jr., International Epidemiology Institute and Vanderbilt University Medical Center

Epidemiology from a radiation perspective will be presented with kaleidoscope coverage of past and present studies of interest to the health physicist. Epidemiology is the study of the distribution and determinants of disease in human populations; but not all studies are equal. Experimental studies (clinical trials) and cohort studies (e.g., atomic bomb survivors) identify individuals with and without exposure and then follow them forward in time to determine cancer outcome. Case-control studies (e.g., prenatal x-ray, indoor radon) identify persons with and without the disease of interest, and then prior radiation exposures are determined and compared. Ecological studies (e.g., cancer risk living near nuclear facilities) compare cancer rates of populations living in geographically defined areas with potential for exposure to cancer rates in populations living in other areas with supposedly lower exposure potential. Actual exposure to individuals, however, is unknown in geographical correlation studies. Epidemiology is an observational science (non-experimental) and is thus susceptible to confounding factors (e.g., smoking) and biasing factors (e.g., differential recall) that can distort study results. Cohort studies are the least susceptible to biases and ecological studies the most. Strengths and limitations of specific radiation studies will be discussed.

3-I Operational Accelerator Health Physics. S. Walker, B. May; Los Alamos National Laboratory, Thomas Jefferson National Accelerator Facility

This class will address general accelerator health physics. Accelerators offer unique and challenging problems for the Health Physicist. Newer and more powerful accelerators are constantly being developed. Monte Carlo codes and other tools are used to predict the outcome of high energy subatomic particles that are accelerated to very high energies. This course will give a broad overview of the various types of accelerators, such as electron, proton and spallation sources, their uniqueness, and the special health physics challenges of working with accelerators. Specific topics to be addressed include accelerator interlock systems, proton accelerators, electron accelerators, spallation targets, ancillary X-ray hazards, prompt and residual radiation hazards, isotope production expectations, rules of thumb for dose expectation, radiation measurements, neutron hazards, dosimetry considerations, beam stop design, radiation measurements inside beam tunnels, and handling of high dose rate targets. The course is directed at the CHP but would also serve as an excellent basis for those studying for the CHP who wish to obtain an overview of accelerator health physics.

Monday - 12:15 - 2:15 PM

M-1 Why You Can't Analyze for ^{228}Ra Directly. R. Litman; Radiation Safety and Control Services

^{228}Ra is the first decay product of naturally occurring ^{232}Th . It is a beta emitter, with a 5.8 year half life. The presence of these isotopes (and their progeny) has in recent years been identified as potential health hazards in drinking water.

The beta and gamma particles emitted by ^{228}Ra are low energy and this provides a significant challenge to the analyst performing routine analytical determination of this isotope.

This presentation identifies a commonly used method for the chemical separation and analysis of ^{228}Ra . The chemistry of the precipitation and separation of radium will be discussed. The most significant aspect of this is the critical timing of the chemical separation steps. The connection of this analysis to other radiochemical analyses for radium on the same sample will be shown.

The concepts of secular equilibrium and time to achieve maximum activity will be discussed with this specific analysis. The final analytical formulas used to determine the actual activity of the isotopes will be constructed from the analytical separation method. The concept of supported/unsupported radioisotopes will be discussed in light of gross alpha analysis and why it does not always represent the true activity in the sample.

M-2 ICRP-66 Applications and Software: Software and Applications of the ICRP Human Respiratory Tract Model (ICRP66) for Health Physics and Industrial Hygiene. A.C. James, M.D. Hoover; ACJ and Associates, Centers for disease Control-National Institute for Occupational Safety and Health

This PEP course illustrates practical applications of the *International Commission on Radiological Protection Publication 66 Human Respiratory Tract Model (HRTM)* (ICRP 1994). Radiological dose assessment examples include implementation of new software developed for the U.S. Department of Energy and the National Institute for Occupational Safety and Health /Office of Compensation Analysis and Support (OCAS) (background information on these software projects can be found at <http://www.imbaexpert.com>). Industrial hygiene examples include respiratory tract deposition of beryllium and anthrax. We will assume that attendees have taken an introductory PEP on the HTRM or are otherwise familiar with its basic characteristics. The new HTRM is a general update of the Lung Model in ICRP Publication 30 (ICRP 1979) for adult workers, and is significantly broader in scope. It applies explicitly to workers and all members of the public, for (1) inhalation of particles, gases and vapors; (2) evaluation of dose (or material retention) in sensitive regions of the respiratory tract, for a given intake or exposure, and; (3) interpretation of bioassay data. The HTRM provides a physiologically realistic framework for modeling respiratory tract retention and excretion characteristics, and the resulting respiratory tract and systemic organ doses. It enables knowledge of the aerosol characteristics, dissolution and absorption behavior of specific materials to be used in a realistic manner, and calculates meaningful doses in

relation to the morphological, physiological, and radiobiological characteristics of the various tissues of the respiratory tract. Approaches for obtaining needed aerosols properties will also be illustrated in this PEP course.

M-3 Skin Injuries and Interventional Fluoroscopy — Why They Occur and How to Reduce the Risk. L.K. Wagner; The University of Texas – Houston Medical School

Fluoroscopically guided complex interventional procedures have been a terrific advance in the medical care of very sick people, many with life-threatening conditions. The procedures are minimally invasive and the patient's recovery time is very short compared to that of conventional surgery. These benefits must not be compromised by concerns about radiation exposure. However, on relatively rare occasions, some patients have developed severe radiation injury as a result of their radiation exposure during these procedures. To advance the benefit-risk potential of these procedures by reducing the likelihood of these adverse events, it is necessary to understand the characteristics of these injuries, why they occur, and what we can do to diminish their likelihood. This course will investigate the conditions that have led to these events, assess the current state of the practice, and provide recommendations for future improvement.

M-4 Assessment of Radiological Emergencies. W.G. Rhodes III; Sandia National Laboratories

This PEP will present the Federal Radiological Monitoring and Assessment Center (FRMAC) methods for assessing radiological emergencies. In February 2003, the National Nuclear Security Agency published updated manuals and methods, and a new volume of example assessment problems. The updated methods will be reviewed, and changes will be highlighted. The majority of this presentation will focus on the new volume of the Assessment Manual, that includes basic scenarios and assessment results of 6 example radiological emergencies. Last, a review of weapon of mass destruction assessment will be presented using responder emergency management tools. Students will actively participate in this PEP, and will be provided copies of the FRMAC Assessment Manual on a CD, worksheets, class notes, and report outputs from example problems.

Tuesday - 12:15 - 2:15 PM

T-1 Health Physics Archeology: Dose Reconstructions Conducted by the Centers for Disease Control and Prevention. E.H. Donnelly, E.B. Farfan; Centers for Disease Control and Prevention, South Carolina State University

Since 1990, the Centers for Disease Control and Prevention (CDC) has been conducting research to address the health effects associated with environmental radiation exposures from nuclear weapons production facilities in the United States. This course is an introduction to the overall methods and processes that have been used for dose reconstruction efforts involving project goals, definitions, critical assumptions, public input, brief history of nuclear weapons development and CDC involvement, and specific dose reconstruction processes. The course gives an overview of the current and completed CDC projects, including the Hanford Environmental Dose Reconstruction (HEDR) project, the Idaho Na-

tional Engineering & Environmental Laboratory (INEEL) project, the Republic of the Marshall Islands (RMI) fallout study, the Los Alamos National Laboratory (LANL) project, the Nevada Test Site (NTS) fallout study, the Savannah River Site (SRS) project, and the Fernald Feed Materials Production Center Project. Special emphasis is placed on the dose reconstruction project conducted at the Hanford facility, including history of the site and region, collection and analysis of data, special consideration of diet and lifestyle specific to the Native American Indian Tribes in the assessment domain, reconstruction methods specific to HEDR, results, and conclusions. Finally, the course presents a summary of lessons learned during dose reconstruction efforts at these different facilities.

T-2 Shielding Of Medical Radiation Therapy Facilities – From Design To Construction. N.E. Ipe, A. Boyer, M. Staniford, E. Pampel; Consultant- Shielding Design, Dosimetry & Radiation Protection, Stanford University School of Medicine, Rudolph and Sletten

This course is designed to prepare the shield designer to specify effective shielding for medical radiation therapy facilities and to handle issues related to implementation of shielding during construction. Perspectives from both shield designer and contractor are provided.

The course content includes an introduction to treatment modalities such as Intensity Modulated Radiation Therapy (IMRT), Total Body Irradiation (TBI), derivation of workloads, and basics of photon and neutron shielding. The latter includes methodologies from NCRP 49, 51 and 79, primary and secondary barriers, laminated barriers, neutron production, mazes, direct-shielded doors, skyshine, handling of ducts and penetrations.

Additional topics include regulatory requirements, design limits, interaction with architect in room layout, machine orientation and associated features, and review of architectural drawings. Key elements of an effective shielding report are provided.

Close communication and collaboration between the designer and contractor is crucial for a successful transition from the design to construction phase. The shield designer will also play an integral role in reviewing construction shop drawings and making routine onsite inspections to review the installation. The shield designer must also be prepared for design changes that occur due to constructability issues.

Special issues related to laminated barriers are addressed such as the specifics of the coordination and installation of lead shielding. Subcontractor selection, types/limitations, support systems, coordination issues with other trades, and case specific issues encountered during installation are also addressed. Practical examples and site photographs associated with the various stages of construction of a large cancer center housing seven linear accelerators are included.

T-3 Closing the Loop on Audit Corrective Actions. J.M. Hylko; WESKEM, LLC

The purpose of an audit should be to identify system failures so the auditee can initiate appropriate corrective and preventive actions to fix the problem for good. However, somewhere between the audit report and "closing the loop" on

corrective actions, there can be a breakdown in communication and implementation. This course is not about the audit process (e.g., preparation, performance, reporting and closure). Its purpose is to improve the audit corrective action process to ensure solutions work, thus linking audit results with organizational benefits. Examples consist of identifying reasons for ineffective corrective actions and reviewing strategies to eliminate redundant audits. In addition, reviewing the “quality costs” concept, which considers prevention, appraisal and failure, ensures that organizations understand and achieve maximum benefit from the corrective action process. The quality costs process is used to evaluate the status of cost control efforts and opportunities for cost reduction by implementing system improvements. Since the cost to an organization using an inefficient system can be high, possibly 15-25% of total costs, the opportunity for improvement should easily capture management’s attention.

T-4 Common Issues and Concerns in Radiological Emergency Response Preparedness and Deployment. C.A. Riland; Remote Sensing Laboratory – Bechtel Nevada

A presentation of observations from numerous exercises and events over recent years is provided. Common problem areas and issues are pulled from After Action Reports, Lessons Learned, and personal experiences. The authors present information based upon several different scenarios, including; Terrorist Events, Nuclear Power Plant Events, Nuclear Facility events, and Weapons Events. Issues presented represent views from the perspective of participant, observer, controller, and evaluator. Problem areas discussed include deployment and logistics issues, instrumentation, sample collection and analysis, responder and public protection, data assessment and distribution, management issues, and preparation. Presentation is meant to stimulate thoughts and discussion for problem areas that are well known and also those that are less obvious.

*Work supported by the Department of Energy under Contract DE-AC08-96NV11718

Wednesday - 12:15 - 2:15 PM

W-1 Managing and Auditing University Radiation Safety Programs. P.A. Karam; University of Rochester

University radiation safety programs can be complex, combining large numbers of researchers and radiation workers working with radioactive materials in a variety of settings, as well as research irradiators, check sources, radioactive stock vials, and the administration of radioactive materials to either human or animal subjects. This wide variety of uses presents a number of administrative and technical challenges that can make a broadscope license much more difficult to administer, as well as much more interesting. In addition, working with university administrators and researchers who are not always attentive to good radiation safety work practices can lead to other challenges, as well as high antacid bills.

An essential part of any radiation safety program is making sure that good radiological work practices are being followed. This includes performing periodic laboratory inspections. These inspections help remind the researchers

of the requirements to follow regulations and they help Radiation Safety feel comfortable that researchers are following regulatory and institution requirements and policies. If problems are found, these inspections can also serve as the basis for corrective or disciplinary actions and can help reassure regulators that the institution is dedicated to adhering to proper radiation safety practices.

In this PEP, we will review some of the requirements of maintaining and administering a university radioactive materials license. We will discuss methods of working with researchers in a non-dictatorial manner to help them understand the necessity of following proper radiation safety procedures (although, let’s face it, there will always be “problem children”), as well as how to work with your regulators in a non-adversarial manner.

W-2 Introduction to the Health Physics of Electromagnetic Fields (0-300 GHz). J.A. Leonowich; Pacific Northwest National Laboratory

The biological effects of non-ionizing radiation and fields continue to be of concern to both the public and the health physics community. These fields have been linked to a number of health effects, most importantly cancer. This introductory course will cover the following topics: low frequency (0 - 3 kHz) electric and magnetic fields and radio frequency/microwave radiation (3kHz - 300 GHz). Discussion of the basic dosimetry associated with the fields and how it relates to energy absorption will be emphasized so that the basis of the present day standards can be understood. Exposure criteria of the Institute of Electrical and Electronic Engineers (IEEE), the American Conference of Governmental Industrial Hygienists (ACGIH), as well as the International Commission for Non-ionizing Radiation Protection (ICNIRP) will be reviewed. Finally, how to measure and establish appropriate control measures for each type of radiation/field will be discussed. Typical instrumentation will be demonstrated. At the end of the course, the student will understand the *proven* health risks associated with this portion of the electromagnetic spectrum, as well as be able to explain these risks to the concerned layman.

W-3 Critical Decisions for First-Time and Experienced Managers (or How I Learned to Love the Org Chart). J.M. Hylko; WESKEM, LLC

Following graduation from a health physics program or related technical field, an individual’s training and career development activities typically focus on acquiring additional work experience and enhancing technical problem-solving skills. However, as health physicists advance throughout their careers, managerial duties, such as supervising employees and overseeing projects, result either through professional advancement or staffing changes within a company. Therefore, as health physicists gain additional experience and years in the profession, they may be required to accept and adapt to the role of a manager. This new role typically requires supervising, guiding and influencing the direction of a department and its employees. Having worked for a variety of managers throughout his career and now supervising an Environmental, Safety and Health (ES&H) Department across three separate projects, the instructor presents first-

hand experiences related to the successes and pitfalls serving as a department manager. Discussion topics and real-life examples will cover defining roles and responsibilities, motivation, communication, reasons for effective leadership, supporting employees during a crisis, as well as allocating resources and budgets. In addition, enhancing your own department's productivity can be achieved with support from other internal organizations (e.g., quality assurance and human resources). Both aspiring and experienced managers will acquire useful information that can be applied immediately in their current work location.

W-4 The Experimental Basis for a Biokinetic Model of Radionuclide-Contaminated Wounds. P.W. Durbin; G.T. Seaborg Center; Lawrence Berkeley National Laboratory

Radionuclide-contaminated wounds are of radiological significance because a wound provides a portal of entry into the body, and the wound site is a tissue at risk if sufficient dose is deposited locally. Interest in development of biokinetic and dosimetric models for radionuclide-contaminated wounds was stimulated by the occurrence of depleted uranium shrapnel wounds in soldiers during the Gulf War. Accordingly, a scientific committee was established jointly by the U.S. National Council on Radiation Protection and Measurements (NCRP) and the International Commission on Radiological Protection (ICRP) to develop an approach to describing the biokinetics of radionuclides deposited in wounds and to calculate doses to the tissues of the wound site. Although there are published reports of the behavior of some radionuclides (mainly Pu and Am) in accidental wounds, most of those cases involved surgical excision of the contaminated tissue and/or the use of DTPA chelation therapy. Therefore, an understanding of the biokinetics of unperturbed radionuclides in wounds requires the use of animal data. This course focuses on the sources, descriptions, and analyses of the experimental animal data that provided the foundation for development of a physiologically and chemically suitable six-compartment biokinetic model for deposited radionuclides in solution or in the form of colloids, particles, or fragments.

Thursday - 12:15 - 2:15 PM

TH-1 Biomedical Ethics for the Health Physicist. L.L. Coronado; National Institutes of Health

What makes clinical research ethical? What is the difference between clinical care versus clinical research? What regulations, principles, and guidelines apply to human subject research? What defines research? Who is a research subject? Who are considered vulnerable populations that require extra protections? What are these extra protections? What criteria are used in assessing the risk and benefits of a clinical study? How about when the study involves ionizing radiation administered solely for research purposes and not for the prospect of direct benefit of the subject? What are the considerations in exposing healthy individuals to ionizing radiation for research objectives? Are there any dose limits? What constitutes true informed consent? What is the purpose and function of the Institutional Review Boards (IRBs)? What role does the Health Physicist

(HP), the Radiation Safety Officer (RSO), the Radioactive Drug Research Committee (RDRC) and Radiation Safety Committee (RSC) play in the arena of clinical research? This PEP course will provide an overview of the historical perspectives, regulatory framework and current challenges of clinical research, tailored for the Health Physicist.

TH-2 Radon Reduction at a Former Uranium Processing Facility (Fernald). K. Eger, L. Rutherford, K. Rickett, J. Lawson, B. Fellman, S. Hungate

Approximately 240,000 cubic feet of waste containing about 0.5 iCi/g radium-226 are stored in two large silos at the Fernald Site in southwest Ohio. The material is scheduled for retrieval, packaging, and disposal by burial. Air in the silo headspaces contains radon-222 at a concentration of 20,000,000 pCi/L. Short-lived daughters in these headspaces generate dose rates at contact with the top of the silos up to 105 mrem/hr.

A Radon Control System (RCS) has been designed under contract with the Fluor Corporation to reduce the radon concentration during periods when access to the domes is needed. The RCS draws air from the silos. That air is cooled, dried, and passed through four large beds containing activated charcoal. The carbon delays the passage of the radon enough so that most of it decays in the bed. The fraction of radon exiting the beds is then returned to the silos. The system was designed to reduce the headspace concentration by about 98%.

The first hot test of the RCS was conducted successfully in December 2002 and a second will begin in the spring of 2003.

The application of health physics and engineering principles is illustrated in the design testing and initial operations of the Radon Control System now part of the Fernald Closure Project.

TH-3 Mixed Waste Management at a Large Academic University / Medical Institution. M.J. Zittle; University of California - Los Angeles

Mixed Waste contains both Radiological and Hazardous / Toxic constituents and is subject to complex regulations and legal requirements making storage, treatment, transportation, and disposal difficult and expensive. Management of mixed waste at academic and medical institutions can be especially difficult because of the small quantities and wide varieties of wastes generated. Because these organizations are often non-profit or government funded, it is important to keep costs down while maintaining regulatory compliance. Although often perceived as difficult, it is possible to be in compliance with all Federal and State EPA and NRC regulations without going over budget.

This PEP will focus on effective mixed waste management techniques at Large Academic Universities and Medical Institutions. An overview of the many regulations and enforcement agencies will be presented, focusing on the newly enacted EPA Conditional Exemption for the Storage, Treatment, Transportation, and Disposal of Mixed Wastes. Sorting and segregation schemes for managing mixed waste will be presented and discussed. This PEP will emphasize the importance of utilizing careful analysis

and process knowledge to efficiently manage mixed waste. Training of mixed waste generators is perhaps the most effective means of managing mixed waste. Creative ideas will be presented that allow waste managers at academic and medical institutions to effectively train waste generators and reduce the cost of mixed waste disposal at the same time.

TH-4 Microbial and Antimicrobial Resistance Risk Analysis: Sharing Lessons Learned Across Risk Analytic Disciplines. *H.G. Claycamp; US Food and Drug Administration*

Two recent applications of risk analysis focus on human health risks from microbial agents (microbial/microbiological risk assessment or "MRA") and from microbes that can potentially harbor or transfer resistance to antimicrobial drugs (antimicrobial resistance risk assessment or "ARRA"). The former process typically focuses on food-, water- or air-borne microbial pathogens and the latter on the transfer of antimicrobial drug resistance through the food chain or through human contact. Although the scientific foundations of MRA has century-old origins, only recently have the principles and paradigms of more formal risk analysis been applied. Risk analysts in public health needing to estimate risks from emerging health threats such as microbial diseases, BSE or bioterrorism, borrow from lessons learned in mature risk analytical processes including nuclear power safety and infectious disease epidemiology. The objectives of this course are (1) to introduce the health physicist to MRA and ARRA, (2) to compare and contrast the principles and steps in MRA and ARRA with those in radiation risk assessment, (3) to discuss recently published MRAs or ARRAs and (4) to examine the growing application of MRA for emerging biological threats.

Continuing Education Lectures

Included with Registration

Monday, July 21 - 7:15-8:15 AM

CEL-1 The Susceptibility of the Preimplantation, Preorganogenic Embryo to the Abortigenic and Teratogenic Effects of Environmental Toxicants; A Reanalysis of the "All or None Period." *R. Brent, Jefferson Medical College of Thomas Jefferson University, and duPont Hospital for Children*

In the 1950's a number of investigators discovered that embryos exposed to X-rays during these early stages of mammalian development resulted primarily in embryonic death rather than congenital malformations (Brent, Rugh, Russell, Wilson). Wilson and Brent coined the term "The All-Or-None Period" to describe this phenomenon. This concept has been utilized in counseling women exposed to radiation during the early stages of pregnancy to indicate that the teratogenic risk is not increased. Furthermore, the risk of pregnancy loss is related to the dose, with the threshold dose for abortion at 10 rads (0.1 Gy). More recently, studies have been published (Generoso et al, Streiffer) which appeared to refute "the all-or-none period" by demonstrating that certain chemicals and high doses of radiation can increase the risk of malformations as well as abortion in susceptible strains of mice. However, an increased risk of malformation was not found in other strains of animals or for many other teratogenic drugs. In actuality, these animal studies in mice have little application to the human situation. Most other studies in rats, rabbits and even mice corroborate the 1950's reports. At these early stages of gestation the omnipotential cells have the ability to replace killed cells and form a normal embryo (Schlessinger and Brent). Studies with alcohol and other known teratogenic agents indicated that lethality is the only effect of many teratogens during these early stages of development. Putting this information into perspective is essential for appropriate counseling for women of reproductive age.

CEL-2 Current Issues in Radiation Epidemiology. *J.D. Boice, Jr.; International Epidemiology Institute and Vanderbilt University Medical Center*

Although radiation studies have been conducted for nearly 100 years, there are still scientific and societal issues that keep radiation epidemiologist employed. What reduction in risk, if any, follows prolonged exposures? Will worker studies provide answers? Have the Chernobyl and Techa River studies revealed new insights? Do low doses cause noncancers? Is the pooling of indoor radon studies of value? What new studies should be initiated today if resources were available?

Tuesday, July 22 - 7:15-8:15 AM

CEL-3 Radiation Threshold – What Do Basic Studies Tell Us? *J. Ward; University of California, San Diego*

The possibility of a threshold in the response to radiation will be discussed in terms of the known mechanisms whereby the deposition of energy leads to molecular alterations of cellular molecules. In addition consideration will be given to examining the extent to which the "new paradigms" of radiation action can modify the picture.

CEL-4 Nuclear/Radiological Emergency Preparedness in Pennsylvania. *D.J. Allard; Pennsylvania Department of Environmental Protection/Bureau of Radiation Protection*

This lecture will provide an overview of the Commonwealth of Pennsylvania's emergency preparedness program for nuclear power plants and other radiological events. The state's radiation protection program personnel and equipment assets are routinely called to respond to transportation and fixed facility events. During and post 9/11 these assets were inventoried as part of the Governor's Security Task Force, and captured in a report with various recommendations for program(s) enhancement. These recommendations are discussed, as well as progress toward implementation. Similarly, existing plans and procedures, federal interface, staff training, as well as post 9/11 experiences, and routine exercises and drills will be described. With nine nuclear power plants on five sites, over 1200 material licensees, a university research reactor, the Navy's Bettis Atomic Lab, a dozen decommissioning sites, and major transportation routes with regular materials transport, we believe our state's various homeland security and radiological emergency preparedness program elements are strong – and well positioned to respond as needed.

Wednesday, July 23 - 7:15-8:15 AM

CEL-5 Solar Evolution and its Effects on Background Cosmic Radiation Levels through Time. *P. Andrew Karam; University of Rochester*

Cosmic radiation is universal - it exists in all parts of the universe and has existed since the universe began. Some of this radiation, in the form of ultraviolet light, solar cosmic rays, and galactic cosmic radiation filters through our atmosphere to reach the Earth's surface, providing just over 10% of the natural radiation environment to which we are all exposed. Cosmic radiation exposure depends most strongly on solar activity and the composition of the Earth's atmosphere, all of which have evolved dramatically over the life of the Earth. Because of this, cosmic radiation levels (including UV) have changed equally dramatically with time. In this CEL, we will discuss some of the factors affecting cosmic radiation exposure and how these factors (and sea-level cosmic radiation levels) have evolved through time.

CEL-6 Radiological Emergency Response Instrumentation - A Discussion of Typical Instrumentation Used, Items to Consider in Selection of Instruments, and Packaging, Storage, and Transport of Instrumentation. C. Riland; Remote Sensing Laboratory - Bechtel Nevada

The majority of instrumentation is the same used for everyday Health Physics activities. The major difference is the circumstances under which the instruments are used. Health Physics instrumentation needs for emergency response operations can vary greatly with the arrival time, the unique situation and the mission of responding elements. Determination of appropriate instrumentation requires assessment of several factors, including; the skill level of instrument users, conditions of instrument use (radiation levels, environmental conditions, etc), storage and transport of instruments, and costs. A discussion of portable instrumentation used to respond to emergency situations is presented, beginning with examining potential radiological emergency response scenarios, then the skill level of response personnel. Potential hazards are also identified, before instrument selection is discussed. The presentation concludes with a summary of issues involved in the use of instruments during an emergency response situation and how to maintain equipment readiness.

Thursday, July 24 - 7:15-8:15 AM

CEL-7 Non-ionizing Radiation (NIR) Standards Update. J. Leonowich; Pacific Northwest National Laboratory

A number of revisions and updates to NIR standards have occurred in the last two years. A number of new and revised IEEE standards dealing with electromagnetic fields have been released, including ones on low frequency (0 – 3 kHz) and protection of electro explosive devices against radio frequency radiation. The ANSI laser standard was substantially revised in 2000 and also will be discussed. Pertinent international standards that might have impact in North America will also be discussed.

Student should be familiar with NIR standards and health protection issues.

CEL-8 Update on New Radionuclide Therapies in Nuclear Medicine. D.R. Fisher; Pacific Northwest National Laboratory

New approaches to high-dose radionuclide therapies using radiolabeled monoclonal antibodies have advanced the treatment of lymphoma and leukemia. Yttrium-90-Y2B8 (Zevalin, IDEC Pharmaceuticals) was approved by the FDA in February, 2002, for treating relapsed B-cell non-Hodgkin's lymphoma. Iodine-131-labeled-B1 (Bexxar, Coulter) is nearing FDA approval for treating the same cancer. Alpha-emitting radionuclides have also been successful in experimental cancer therapy.

For example, leukemia patients have been treated with bismuth-213-HuM195, and radium-223 chloride (Anti-cancer Therapeutic Inventions) has been used to treat bone cancer skeletal metastases in breast and prostate cancer patients. In brachytherapy of prostate cancer, seed implants

using palladium-103 and iodine-125 have become treatment options of choice for patients with confined prostate carcinoma. The growth in high-dose radionuclide therapy will continue as clinical trials show success and new products are approved by the FDA for general use.

48th Health Physics Society Meeting – July 20-24, 2003

Hotel Reservation Form

Town & Country Resort & Conference Center
500 Hotel Circle North, San Diego, CA 92108

(800) 772-8527, FAX: (619) 298-4681, www.towncountry.com (use code HEALTH)

Check In Time: 3:00 PM – Check Out Time: 11:00 AM

Room Rate: \$122 or \$132 or \$142 (Rate is location dependent)

A limited number of government rooms are available at \$99 per night

Room rates are subject to the current 10.5% city tax. Family Plan is at no additional charge for children 18 years and younger sharing the same room with parents.

Reservation must be received by June 27, 2003 with one of the following:

- An enclosed check or money order covering the first night's stay to include 10.5% city tax.
Amount of Check/Money Order \$ _____
or
- Deposit can be made to a major credit card with an expiration date and an authorized signature.

Deposits will be refunded only if cancellation notification is received at least 48 hours (2 days) prior to arrival.

Reservations must be received by June 27, 2003. Reservations received after this date will be on a space and rate available basis. Rates are good for 3 days before and after the convention dates.

Name: _____

Address: _____


City: _____ State/Country: _____ ZIP/Postal Code _____

Phone: _____ FAX: _____

Sharing Room With: _____ # of Adults in Room _____

Arrival Date: _____ Time: _____ Depart. Date: _____ Time: _____

Smoking Non-Smoking Preferred Room Type King 2 Double Beds

 **Accommodations for the Disabled:** The Town & Country Hotel, in compliance with the American Disabilities Act, has equipment and services available. Please inform them of your needs prior to arrival.

Special Requests: _____

Credit Card: American Express MasterCard VISA
 Carte Blanche Discover Diners Club

Cardholder's Name: _____ Exp. Date: _____

Credit Card # _____

Cardholder's Signature _____

Please copy this form and mail or FAX your reservation to the address/FAX number above

2003 Health Physics Society Summer School

University Health Physics

14-18 July 2003

Point Loma Nazarene University, San Diego, California

Overview

As any campus Radiation Safety Officer (RSO) can testify, the diversity of subject matter inherent in a campus setting can sometimes make your head spin. Specialty areas such as medical, accelerator, laboratory, and nonionizing all converge in the campus setting, making it a virtual microcosm of the health physics universe. The campus is also the place where management, organizational, and interpersonal skills will be put to the test. This diversity of technical and management skills is reflected in the curriculum and format for the 2003 Health Physics Society (HPS) Summer School on University Health Physics.

Each day will have one or more topical themes, with time allotted for both formal presentations and open discussions relevant to the themes. For example, Monday will be devoted to a review of detection, measurement and dosimetry principles, as well as applications to campus settings. Tuesday will include three presentations on various aspects of accelerator health physics, while Wednesday will be devoted to medical center applications. Laboratory safety and security form the primary focus for Thursday, with organizational and management approaches covered on Friday. A full curriculum is presented on the following page. While primarily intended for the campus health physicist or RSO, this collection of topic areas should also be of interest to other health physicists with broad-based responsibilities.

Enrollment will be limited so plan early! For additional information, visit us at the Summer School Web site which can be accessed through www.sdhps.org.

Academic Dean: Patrick Papin, PhD 619-594-6240 ppapin@sciences.sdsu.edu

Administrative Dean: Dee Puntenney, PhD 619-849-2349 DeePuntenney@ptloma.edu

Associate Dean: Richard Belanger, CHP 858-483-0807 rba@san.rr.com

Overview and Principles

- Instrumentation, Calibration, and Measurements, *Robert Halliburton*
- External Radiation Dosimetry, *James Turner*
- Development and Implementation of an Internal Radiation Safety Program for Academic and Biomedical Institutions, *Clayton French*

Accelerator Health Physics and Laser Safety

- Accelerators: Types, Principles, Uses, *Frank Harmon*
- Accelerators: Operational Safety and Dosimetry, *Richard Brey*
- Accelerators: Radiation Fields and Shielding, *Vaclav Vylet*
- Lasers and Nonionizing Sources, *Dewey Sprague*

University Medical Center Applications

- Implementation Guidance for the New 10 CFR 35 Regulatory Landscape, *Jeffrey Siegel*
- An Operational Control Program for Nuclear Medicine Applications, *Victoria Morris*
- Radiation Protection for Intravascular Brachytherapy Applications, *Peter Vernig*
- The Role of the Health Physicist in Human Biomedical Research, *Marcia Hartman*

General Safety and Security Programs

- Control of Radioactive Materials at Remote Research Locations, *Sandy O'Brien*
- Control and Dispositioning of Sealed Sources, *J. Andrew Tompkins*
- The AAHP Standard for Qualification and Practice for University and Medical Radiation Safety Officers, *Carolyn J. Owen*
- Performance-based Radiation Safety Program Reviews, *Gerry Westcott*
- Campus Radiological Security, *Andrew Karam*
- Risk Management for Radiation Safety Professionals, *Robert J. Emery*

Organizational and Management Approaches

- Organizational Approaches to Campus Health Physics Programs, *James Schweitzer*
- Integration of Safety Programs: The Departmental Safety Advisor Concept, *Gerry Westcott*
- The Selling of Safety in an Academic Setting, *Robert J. Emery*

HPS Summer School 2003

Daily Schedule

Sunday: Registration: 2:00-7:00 PM
Morning sessions with break: 8:30 AM-12:00 PM (Monday – Friday)
Afternoon sessions with break: 1:30 PM - 5:00 PM (Monday – Thursday)
Wednesday Night Out: 6:00-9:00 PM

Location

The Summer School will be held at Point Loma Nazarene University (PLNU), a small, liberal arts college located in the scenic Sunset Cliffs area of San Diego. Educational sessions will be held at the Fermanian Business Center, which has state-of-the-art presentation equipment. Students will be seated at conference-style tables (with their backs to the Pacific Ocean so as not to be distracted by the view!).

Housing

A selection of on-campus and off-campus accommodations is available. On-campus housing consists of “flex housing” (www.ptloma.edu/universityinformation/campustour/Flex.htm), which are apartment-style units that are located adjacent to the Fermanian Business Center. These units feature basic amenities (such as fridge, microwave, and Internet connection) along with a great ocean view. Each unit has two bedrooms, with either two or three beds per room. The cost for the week for a private bedroom is \$265; the cost for a shared bedroom is \$135. Families can rent an entire unit (sleeps 5) for \$525 for the week. Please note that alcoholic beverages are not allowed on campus.

For those wanting accommodations with more amenities, special rates can be obtained at some nearby hotels. Please note, however, that there are no hotels within reasonable walking distance of the PLNU Campus. Limited transportation will be available to pick up and drop off students; however, the organizers cannot guarantee that all back-and-forth transportation requests can be accommodated, so some personal transportation arrangements may be necessary.

A range of hotel accommodations is available, depending on your budget and amenities index. A listing of hotels with special rates for PLNU functions, along with descriptions and directions, can be found at www.ptloma.edu/alumni/accommodations.htm. Please note that reservations must be made by phone to get the PLNU special rate.

Meals

A cafeteria is located close to the Fermanian Business Center. A meal package for the week of the Summer School (covering breakfast, lunch, and dinner) is available for \$95, or meals can be purchased individually at the cafeteria. There are many great cafes and restaurants within short driving distance. Refreshments will be provided during breaks, and the cost is included in the registration fee.

Special Events

A reception and registration area will be open from 2:00 PM to 7:00 PM on Sunday at the Fermanian Conference Center. Light refreshments will be served. A special night out including dinner is planned for Wednesday from 6:00 PM until 9:00 PM. The cost of both of these events is included in the registration fee. Guests may attend the night out and dinner for \$30. Check the Summer School Web site for updated information on the night out.

Transportation

Most major airlines fly into the San Diego International Airport. PLNU is only a short drive from the airport (about four miles). Taxi fare should be about \$10. For off-campus stays, please check with the hotel for information on transportation from the airport.

Area Attractions

San Diego is one of the premier tourist destinations in the country. In addition to the usual attractions, there is a world-class surfing area just a short walk from the Campus, and Cabrillo National Monument is just a stone's throw away. Sea World, Old Town, and Downtown San Diego are just a few miles away. The surrounding area is conducive to hiking, biking (assuming you like hills!), and other recreational activities.

Registration Form

26th Annual Health Physics Summer School, 14-18 July 2003
University Health Physics

HPS Member No: HPS _____ Non-HPS Member: _____

Registration Deadline: 15 June 2003. Note: Registration is limited to 75 students with priority given as follows: HPS members by date of registration, Non-HPS members by date of registration

Name: _____

Affiliation: _____

Address: _____

City/State/Zip: _____

Phone: () _____

Fax : () _____

E-mail: _____

REGISTRATION FEE: Includes the course textbook, Sunday reception, Wednesday night banquet and breaks

HPS Member \$735 \$ _____

Non-HPS Member \$795* \$ _____

* Includes HPS Associate Membership for 2003

HOUSING

On-campus apartment-style housing (check one):

___ Entire unit (\$525) \$ _____

___ Private bedroom (\$265) \$ _____

___ Shared room (\$135) \$ _____

MEALS

\$95.00 (Optional meal package for on-campus stay) \$ _____

WEDNESDAY NIGHT OUT: Program on Wednesday included in the registration fee

Additional tickets @ \$30/ person # of Tickets _____ X\$30 \$ _____

Total Fees Enclosed \$ _____

Payment Information: Make check payable to: Health Physics Society

_____ VISA _____ Mastercard _____ American Express

Card Number: _____ Expiration Date: _____

Cardholder Name _____

Signature: _____

Cardholder Name (print): _____

Credit Card Billing Address: _____

Cancellation Policy: Prior to 15 May 2003, the registration fee minus \$50 will be reimbursed; prior to 15 June 2003, fee minus \$100. After 15 June 2003, no refund can be granted. Substitutions will be honored at anytime.

Mail To: Health Physics Society, 2002 Summer School
1313 Dolley Madison Blvd., Suite 402
McLean, VA 22101
Phone: 703-790-1745
Fax: 703-790-2672

If faxing, please do not mail the original.

Meeting Refund & Registration Policies on page 4.

Health Physics Society's 48th Annual Meeting

July 20-24, 2003 San Diego, California

CHP?
NRRPT?

Yes No
 Yes No

HPS Member Number: hps _____
Name for badge: (First) _____ (Last) _____ (Nickname) _____

Affiliation (for badge) (limit to 18 characters and spaces): _____

Address (for confirmation): _____

City: _____ State: _____ Zip/Postal Code: _____

Business Phone: _____ FAX: _____

Email: _____ **If Registering - Companion Name:** _____

Preregistration Deadline is June 27, 2003

REGISTRATION FEES: (Mark Appropriate Boxes)	Preregistration Fees	On-Site Fees
<input type="checkbox"/> HPS Member (Sun. Reception, Mon. Lunch, Tues. Awards Dinner)	\$315	\$390
<input type="checkbox"/> Non-Member (Sun. Reception, Mon. Lunch, Tues. Awards Dinner)	\$375*	\$450*
<input type="checkbox"/> CRSO Registration (Includes CRSO Night Out)	\$140	\$155
<input type="checkbox"/> HPS Member/CRSO Registration (All events both groups)	\$405	\$495
<input type="checkbox"/> HPS Non-Member/CRSO Registration (All events both groups)	\$465*	\$555*
<input type="checkbox"/> Student (Sun./Student Receptions, Mon. Lunch, Tues. Awards Dinner)	\$ 55	\$ 55
<input type="checkbox"/> HPS Emeritus Member (Sun. Reception, Mon. lunch, Tues. Awards Dinner)	No Fee	No Fee
<input type="checkbox"/> Companion (Sun. Reception, Mon.-Wed. Continental Breakfast & pm snacks)	\$ 50	\$ 50
<input type="checkbox"/> Exhibition ONLY (Exhibit Hall Badge)	\$ 25	\$ 25
<input type="checkbox"/> Exhibitor (Two Per Booth)	No Fee	No Fee
<input type="checkbox"/> Additional Tues. Awards Dinner Ticket(s) # of Tickets _____	\$ 45	\$ 45
<input type="checkbox"/> Additional CRSO Night Out at the Zoo Ticket(s) # of Tickets _____	\$ 65	\$ 75
<input type="checkbox"/> Additional CRSO Night Out at the Zoo Child (Age 3-11) Ticket(s) # of Tickets _____	\$ 40	\$ 45
<input type="checkbox"/> AAHP Awards Lunch Ticket(s) (Tues.) '02 NEW CHP Check if attending	Free	Free
<input type="checkbox"/> AAHP Awards Lunch Ticket(s) (Tues.) CHP other than above	\$ 10	\$ 10
<input type="checkbox"/> AAHP Awards Lunch Ticket(s) (Tues.) Guest	\$ 15	\$ 15

*Includes Associate Membership for year 2003.

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

How many previous CRSO Conferences have you attended? # _____

SOCIAL PROGRAM:	Preregistration Fees	On-Site Fees	Total
<input type="checkbox"/> San Diego LAC Poolside Fiesta (Saturday, 7/19)	# attending _____	# attending _____	No Fee
<input type="checkbox"/> America's Finest City Tour (Sunday, 7/20)	# of Tickets _____ X \$20	# of Tickets _____ X \$25	_____
<input type="checkbox"/> Waterways and Highways San Diego (Monday, 7/21)	# of Tickets _____ X \$35	# of Tickets _____ X \$42	_____
<input type="checkbox"/> Lifestyle La Jolla (Monday, 7/21)	# of Tickets _____ X \$20	# of Tickets _____ X \$25	_____
<input type="checkbox"/> Baseball game Padres vs. Cardinals (Monday, 7/21)	# of Tickets _____ X \$30	# of Tickets _____ X \$30	_____
<input type="checkbox"/> 5K Fun Run/Walk (Tuesday, 7/22)	# of Tickets _____ X \$30	# of Tickets _____ X \$35	_____
<input type="checkbox"/> Golf at Coronado Golf Course (Tuesday, 7/22)	# of Tickets _____ X \$75	N/A	_____
<input type="checkbox"/> South of the Border Tijuana (Tuesday, 7/22)	# of Tickets _____ X \$55	# of Tickets _____ X \$62	_____
<input type="checkbox"/> Coronado Charm Walking Tour (Wednesday, 7/23)	# of Tickets _____ X \$29	# of Tickets _____ X \$34	_____
<input type="checkbox"/> Gaslamp Quarter Pub Crawl Wednesday, 7/23)	# of Tickets _____ X \$25	# of Tickets _____ X \$35	_____
<input type="checkbox"/> S. California Wine Country (Thursday, 7/24)	# of Tickets _____ X \$81	# of Tickets _____ X \$91	_____

TECHNICAL TOURS:	Preregistration Fees	On-Site Fees	Total
<input type="checkbox"/> San Diego Gamma Knife Center Tour (Monday, 7/21)	# of Tickets _____ X \$18	# of Tickets _____ X \$22	_____
<input type="checkbox"/> DIII-D National Fusion Facility (Tuesday, 7/22)	# of Tickets _____ X \$18	# of Tickets _____ X \$22	_____

PAYMENT INFORMATION - Government Requisitions are accepted for registration, however Purchase Orders are NOT accepted for PEP, AAHP, Social/Technical Tour Registration.

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

VISA MasterCard American Express Card Number: _____ Exp. Date: _____

Credit Card Billing Address: _____

Cardholder Name: _____ Signature: _____

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

**Please see reverse side of form for AAHP, PEP
Registration and Disabilities Information**

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

Your Housing while in San Diego: _____ Name: _____

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

AAHP COURSES: Saturday, 7/19 - 8:00 AM - 5:00 PM

- Course 1 - Respirator Program Elements and Requirements of the New NRC & OSHA ... *Bevis* \$175.00
- Course 2 - Responding to Large-Scale Dispersion of Radioactive Material. *Riland, Rhodes III* \$175.00
- Course 3 - Materials and Methods for Training Responders... *Brodsky, Stangler, Buddemeier* \$175.00

PROFESSIONAL ENRICHMENT PROGRAM:

Sunday, 7/20 8:00 - 10:00 AM

- 1-A Department of Energy's Transportation Emergency Preparedness Program, Part 1... *B. Buddemeier*
- 1-B Medical Laser Safety; *K. Barat*
- 1-C Radioactive Materials Transportation Review - Part 1 of Two Part Course. *S.M. Austin*
- 1-D U.S. Environmental Protection Agency's Risk Assessment Methodology... *A. Fellman*
- 1-E Detection and Decision at Low Total Counts. *J.L. Alvarez*
- 1-F The Art and Science of "Selling" Your Radiation Safety Program. *R.J. Emery*
- 1-G Fundamentals of Preparing ANSI and IEC Standards... *M. Cox, M. Johnson*
- 1-H How to Prepare for the ABHP Exam, with Emphasis on Part II. *P.S. Stansbury*
- 1-I Physics, Health Physics, and Applications of Backscatter X-Ray Imaging. *D.J. Strom, J. Callerame*

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

Sunday, 7/20 10:30 AM - 12:30 PM

- 2-A Department of Energy's Transportation Emergency Preparedness Program...Part II. *B. Buddemeier*
- 2-B Developmental and Reproductive Risks of Ionizing Radiation, EMF... *R. Brent*
- 2-C Radioactive Materials Transportation Review - Part 2 of Two Part Course. *S.M. Austin*
- 2-D How to Deal With Fears of Radiation and Nuclear Terrorism – Part I... *R. Johnson*
- 2-E The Effects of Nuclear Weapons & Radiological Dispersive... *J.A. Auxier, J.L. Alvarez*
- 2-F Internal Dose Calculations in Nuclear Medicine. *M. Stabin*
- 2-G ICRP 66 Respiratory Tract Model. *H. Cember*
- 2-H How a Non-Profit Organization Can Put on a Course to Help People... *P.S. Stansbury*
- 2-I Review of Current CT Technology and CT Dosimetry in Modern CT Scanners. *T. Yoshizumi*

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

Sunday, 7/20 2:00 - 4:00 PM

- 3-A Department of Energy's WMD Radiological/Nuclear Awareness... *J. DiLorenzo*
- 3-B Obtaining Laser Safety in the Research Setting. *K. Barat*
- 3-C RCRA for the Health Physicist. *W.V. Lipton*
- 3-D How to Deal With Fears of Radiation and Nuclear Terrorism – Part II... *R. Johnson*
- 3-E All You Wanted to Know About Tritium. *R. Litman*
- 3-F Implementation of the ICRP Publication 68 Series of Models... *C. Potter*
- 3-G Status of Homeland Security Department Standards for Radiological... *M. Cox*
- 3-H Radiation Epidemiology for the Health Physicist. *J. Boice*
- 3-I Operational Accelerator Health Physics. *S. Walker, B. May*

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

Monday, 7/21 12:15 - 2:15 PM

- M-1 Why You Can't Analyze for ²²⁸Ra Directly. *R. Litman*
- M-2 ICRP-66 Applications and Software: Software & Applications... *A.C. James, M.D. Hoover*
- M-3 Skin Injuries and Interventional Fluoroscopy — Why They Occur...*L.K. Wagner*
- M-4 Assessment of Radiological Emergencies. *W.G. Rhodes III*

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

Tuesday, 7/22 12:15 - 2:15 PM

- T-1 Health Physics Archeology: Dose Reconstructions... *E.H. Donnelly, E.B. Farfan*
- T-2 Shielding Of Medical Radiation Therapy... *N.E. Ipe, A. Boyer, M. Staniford, E. Pampel*
- T-3 Closing the Loop on Audit Corrective Actions. *J.M. Hylko*
- T-4 Common Issues and Concerns in Radiological Emergency... *C.A. Riland*

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

Wednesday, 7/23 12:15 - 2:15 PM

- W-1 Managing and Auditing University Radiation Safety Programs. *P.A. Karam*
- W-2 Introduction to the Health Physics of Electromagnetic Fields (0-300 GHz). *J.A. Leonowich*
- W-3 Critical Decisions for First-Time and Experienced Managers... *J.M. Hylko*
- W-4 The Experimental Basis for a Biokinetic Model of Radionuclide... *P.W. Durbin*

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

Thursday, 7/24 12:15 - 2:15 PM

- TH-1 Biomedical Ethics for the Health Physicist. *L.L. Coronado*
- TH-2 Radon Reduction at a Former Uranium... *K. Eger, L. Rutherford, K. Rickett, ...*
- TH-3 Mixed Waste Management at a Large Academic University / Medical Institution. *M.J. Zittle*
- TH-4 Microbial and Antimicrobial Resistance Risk Analysis: Sharing Lessons... *H.G. Claycamp*

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

MENTORING

- Want to be a Mentor (See page 14) _____ specialty/interest No Fee
- Would like to sign up for a mentor (available for First Time Attendees and Students ONLY) No Fee
 _____ specialty/interest

HPS Secretariat
1313 Dolley Madison Blvd.
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McLean, VA 22101
(703) 790-1745
FAX: (703) 790-2672
Email: hps@burkinc.com
Web Page: <http://www.hps.org>

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

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Merrifield, VA

See You There!
San Diego, California - July 20-24, 2003