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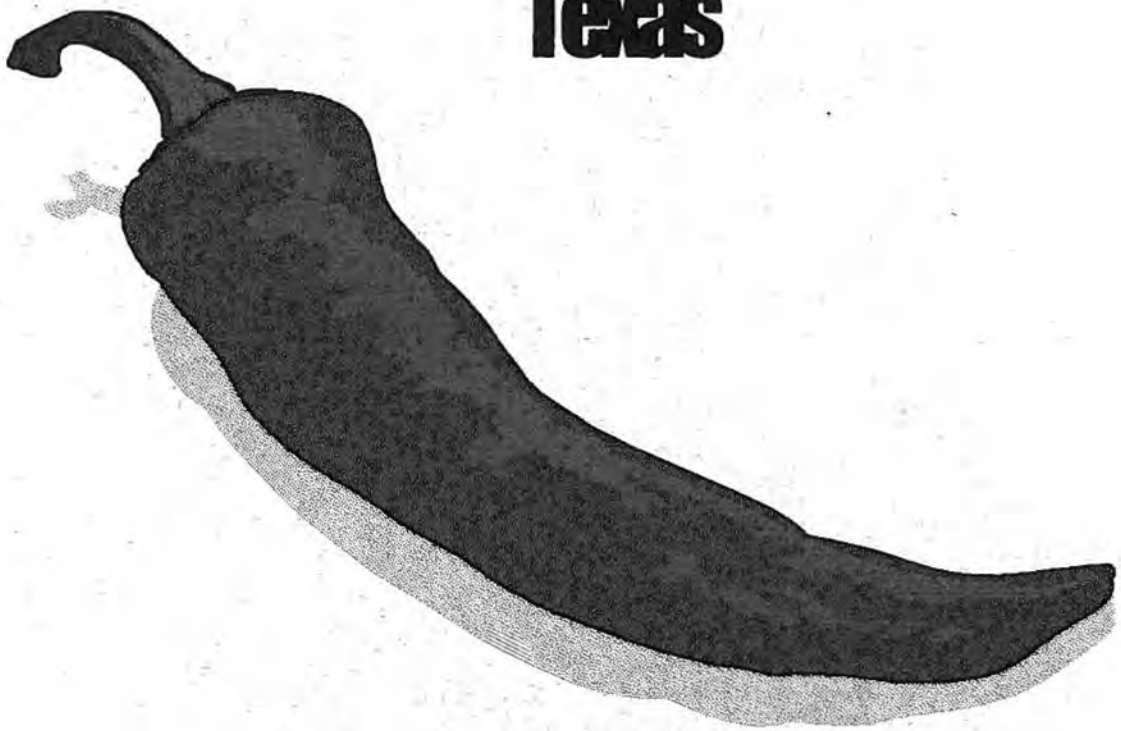
Health Physics Society

42nd Annual Meeting & Exhibition

June 29-July 3, 1997

San Antonio, Texas



Final Program

Headquarters Hotel:
Marriott Rivercenter: (210) 223-1000
Guest FAX: (210) 223-6239
Session and Exhibit Location:
San Antonio Convention Center
Email: hps97am@aol.com

HPS Secretariat
1313 Dolley Madison Blvd.
Suite 402
McLean, VA 22101
(703) 790-1745
FAX: (703) 790-2672
Email: hpsburkmgt@aol.com
Web Site: http://www.hps.org

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Registration Hours

Saturday, June 28	3:00 - 6:00 pm
Sunday, June 29	7:00 am - 7:00 pm
Monday, June 30	8:00 am - 4:00 pm
Tuesday, July 1	8:00 am - 4:00 pm
Wednesday, July 2	8:00 am - 4:00 pm
Thursday, July 3	8:00 am - Noon

Affiliates Program

Monday, June 30	Noon-5:00 pm
Tuesday, July 1	9:30 am - 5:00 pm
Wednesday, July 2	9:30 am - 4:00 pm

1997 Program Committee

Karen S. Langley, Chair

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Dennis O. Dumas

Robert Emery

Lynne A. Fairobent

Ken L. Groves

Bruce D. Pickett

Craig Little

Paul G. Voillequé

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Genevieve S. Roessler, Presidents Emeritus Chair
Kenneth L. Miller, Editor-in-Chief of *Health Physics*
Genevieve S. Roessler, Editor of HPS Newsletter

Past Presidents

1959-1960	E. E. Anderson
1960-1961	J. S. Laughlin
1961-1962	W. D. Claus
1962-1963	C. M. Patterson
1963-1964	W. T. Ham, Jr.
1964-1965	H. L. Andrews
1965-1966	M. Eisenbud
1966-1967	J. R. Horan
1967-1968	W. S. Snyder
1968-1969	W. H. Langham
1969-1970	J. N. Stannard
1970-1971	C. C. Palmiter
1971-1972	D. W. Moeller
1972-1973	R. D. Evans
1973-1974	N. Wald
1974-1975	J. C. Hart
1975-1976	P. L. Ziemer
1976-1977	J. C. Villforth
1977-1978	J. A. Auxier
1978-1979	C. M. Unruh
1979-1980	M. W. Carter
1980-1981	W. C. Reinig
1981-1982	C. B. Meinhold
1982-1983	R. J. Cloutier
1983-1984	B. L. Rich
1984-1985	W. J Bair
1985-1986	J. E. Watson, Jr.
1986-1987	J. W. Poston
1987-1988	D. A. Waite
1988-1989	R. E. Alexander
1989-1990	R. L. Kathren
1990-1991	G. S. Roessler
1991-1992	F. X. Massé
1992-1993	K. J. Schiager
1993-1994	K. L. Mossman
1994-1995	M. Goldman
1995-1996	W. A. Mills

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Bill Bryant - Golf Tournament
Dave Cadena - Floor Mgr.
Kathy Cadena - Catering/Night Out
Luz Cheng - Word Processor
Bob Cherry - ABHP Exam Liaison
Roy Craft - LAC Room
Wes Dunn - Raffle & Prizes
Leonard Earls - Press/Media Liaison
Bob Emery - Ready Room
David Fogle - Secretary
Ron Gauny- Luncheon
Eddie Giles - Summer School
Diane Griffiths - LAC Room
Ian Hamilton - Hospitality
Larry Hamlin - 5K Run
Ken Hardy - Summer School
Mel Hebert - Floor Coordination
Vanessa Hebert - Hospitality
Susan Jablonski - A/V
Rick Jacobi - Introduction Speaker
Kathy James - Press/Media Liaison
Carl Johannes - Welcome Reception
Doug Johnson - Summer School
James Johnson - Press
Tom Johnston - Press/Int'l Liaison
Carl Kee - Int'l Liaison
Eva Legler - Int'l Liaison
Jose Lopez - Int'l Liaison
Chris Maxwell - Daily Newsletter
Ruth McBurney - Raffle & Prizes
Martin Meltz - Summer School
Peter Myers - PEP/Local Information
Linda Morris - A/V
Scott Nichelson - Floor Coordination
Gary Nordwig - Ready Room
David Norman - Floor Coordination
Bill Parish - Welcome Reception/ Local Information
Carson Riland - Summer School
Phil Sandel - Golf Tournament
John Salsman - Conv. Ctr Floor Mgr/ Technical Tours
Tim Schley - Raffle & Prizes
Bruce Schoenbucher - Treasurer
Jim & Sharon Sharp - Luncheon
Philip Shaver - PEP
Christy Shriver - Technical Tours
John Simek - Technical Tours
Barry Smith - Exhibits
Quintin Stokely - Floor Coordination
A. J. Teachout - Web Site
Liz Thompson - Hats/T-shirts
Mary Van Baalen - Word Processor
John & T. J.White - Hospitality
Scott Winters - Breaks/Exhibits
Annmarie Wood-Zika - Hats/T-shirts
Roy Craft - LAC Room

Registration Fees

Class	Pre-Reg.	On-Site
♦Member	$210	$275
♦Non-Member**	$285	$350
♋Student	$ 40	$ 40
♓Companion	$ 45	$ 45
Exhibits only	$ 25	$ 25
Exhibitor (2/Booth)	No Fee	
●Member, 1 Day	n/a	$150
●Non-Member, 1 Day	n/a	$160
♋ Student, 1 Day	n/a	$ 25
Add'l. Awards Luncheon Tickets	$ 30	$ 30
Add'l Night Out Tickets		
Adults	$40	$ 45
Children	$20	$ 25

♦ Includes Sunday Reception and Thursday Awards Luncheon
♋ Includes Sunday and Student Receptions, Thursday Awards Luncheon
♓ Includes Sunday Reception

- Includes Sessions and Exhibitions **ONLY**

** $75 of fee applicable towards NEW HPS Membership if **Completed Application is submitted by September 19, 1997**

Registration Hours

Saturday, 6/28	3–6 PM
Sunday, 6/29	7 AM–7 PM
Monday, 6/30	8 AM–4 PM
Tuesday, 7/1	8 AM–4 PM
Wednesday, 7/2	8 AM–4 PM
Thursday, 7/3	8 AM–Noon

Information

Speaker Instructions

You will be allotted a total of 12 minutes unless you have been notified otherwise.

The **Ready Room** (Patio A) in the Convention Center will be open Monday from 7:00–11:00 am and 1:00–4:00 pm, Tuesday from 8:00–10:30 am and 1:00–4:00 pm and Wednesday from 8:00–10:30 am and 1:00–3:30 pm. Slides are to be brought to the designated ready room for loading and previewing no later than the time indicated below:

Present. Time	Delivery Deadline
Monday PM	7–11 am Monday
Tuesday AM	1–4 pm Monday
Tuesday PM	8–10:30 am Tues.
Wednesday AM	1–4 pm Tuesday
Wednesday PM	8–10:30 am Wed.
Thursday AM	1–3:30 pm Wed.

Please meet with your session chairs in the meeting room where your paper will be presented 15 minutes before the beginning of the Session.

Placement Service

Placement Service listings will be posted in Rooms 103/104 (Convention Center), with hours from 8:00 am to 5:00 pm, Monday through Wednesday, and 8:00 am - noon on Thursday. Interviews may be conducted in the designated areas of the Placement Center.

Business Meeting

The **Annual Business Meeting** will be convened at 5:30 pm on Wednesday, July 2, in the River Room (Convention Center).

Awards Luncheon

The **Awards Luncheon** will be held from 12:30 - 2:30 pm on Thursday, July 3, in the Marriott Rivercenter Salons A-F. The following awards are to be presented:

Founders Awards
John P. Corley
Genevieve S. Roessler

Distinguished Scientific Achievement Award
John R. Johnson

Robley D. Evans Commemorative Medal
Constantine Maletskos

Elda E. Anderson Award
Jack F. Higginbotham

Fellow Class Awards
Raymond A. Guilmette
Sydney W. Porter
Paul S. Rohwer
Richard J. Vetter

Student Awards
To Be Announced

The following menu has been selected for the **Awards Luncheon:**

Salad Southwest
Breast of Chicken a la Forestiere
Potato Dauphinoise
Summer Squash and Zucchini
Asparagus au Beurre
Texas Pecan Torte

Companion Hospitality Suite

The Hospitality Suite in Conference Rooms 17 and 18 at the Marriott Rivercenter will open Noon-4:30 pm on Sunday, June 29, Monday through Wednesday, June 30-July 2 from 7:30 am-4:30 pm and Thursday, July 3 from 8:00 am-Noon. The suite will be a place to mingle, receive and leave messages and gather information on the many attractions to enjoy in San Antionio and the surrounding area. There will be a complimentary Continental Breakfast Monday morning from 8:00-9:15 AM for all registered Companions, which will feature a safety and orientation to San Antonio presentation.

Future Annual Meetings

43rd	7/12-16,1998	Minneapolis
44th	6/26-7/1,1999	Philadelphia

Future Midyear Topical Meetings

31st	February 8-11, '98	Mobile, AL
32nd	January 24-27, '99	Albuquerque, NM

Activities and Tours

NOTE: Tickets still available for sale can be purchased at the HPS Registration Desk.

Saturday, June 28

Guadalupe River	10 AM-5 PM

Sunday, June 29

City Tour	1-5 PM
Opening Reception	6-7:30 PM

Monday, June 30

Hospitality Ste. Mixer	8 AM
City Tour	9:30 AM-1:30 PM

Tuesday, July 1

Golf Tournament	7 AM-2 PM
Fredericksburg Tour	8 AM-5 PM
6 Flags Fiesta TX	9:30 AM-4:30 PM
Sea World	9:30 AM-4:30 PM
Night Out	6:30-10 PM

Wednesday, July 2

5K Run/Walk	6:30 AM
Schlitterbahn Waterpark	9:30 AM-4 PM
Natural Bridge	9:30 AM-2:30 PM
Gruene, Texas	6-11:30 PM

Thursday, July 3

Awards Luncheon	12:30-2:30 PM

G. William Morgan Trust Fund

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

G. William Morgan was a Charter member of the Society and during the Society's early years a very active member. Bill began his health physics career at Oak Ridge National Laboratory as part of the Manhattan Project. He later joined the Atomic Energy Commission and was instrumental in the development of the initial regulations that became part of 10CFR20. He was a great champion of education and helped establish the AEC Health Physics Fellowship Program. Bill later became very successful in the real estate business, but always retained his interest in the health physics profession. The Society's Presidents Emeritus Committee has responsibility for the selection of the international experts who will be supported by the G. William Morgan Trust Fund.

Important Events

Welcome Reception

The HPS Welcome Reception will be held Sunday, June 29 from 6–7:30 pm at the Marriott Rivercenter Hotel.

Exhibits

Free Lunch! Free Lunch! – Noon, Monday, June 30. All registered attendees are invited to attend a complimentary lunch in the exhibit hall immediately following the Plenary Session

Breaks during the Week – 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

Saturday – AAHP Courses will be held in the Marriott Rivercenter Hotel.

Sunday – PEP Sessions will be held in the Marriott Rivercenter Hotel.

Monday–Thursday – Sessions will be held at the San Antonio Convention Center.

Wednesday – Introduction to Science Teachers Workshops with Orientation information for conduct of Science Teachers Workshops including six speakers describing helpful success stories for HPS Chapter representatives and interested members. 2:00–5:00 pm, Conference Room 8 at the Marriott Rivercenter Hotel.

The **AAHP Luncheon** (Tuesday, July 1, 12:15-2:15 pm) will be held in the North Banquet Hall, San Antonio Convention Center. Active and Emeritus CHPs will receive complimentary tickets. Associate members of the Academy and Academy guests may purchase tickets at the Registration Desk.

The **Awards Luncheon** (Thursday, July 3, 12:30-2:30 pm) will be held at the Marriott Rivercenter, Salons A-F.

New This Year

- All posters (including student posters) up Monday–Wednesday in Exhibit Hall
- Poster Session featured Monday 1:30-3:00 pm – No other session at that time
- Wednesday am Plenary Session – featuring G. William Morgan lectures
- New PEP Refund Policy – See page 27
- Drop in Child Care
- Walk to and from the Night Out

Health Physics Society Committee Meetings

(M)=Marriott Rivercenter; (CC)=San Antonio Convention Center

Saturday, June 28, 1997

FINANCE COMMITTEE *(M)*
8:30 am-Noon Conference Rm 7

ABHP BOARD MEETING *(M)*
9:00 am-5:00 pm Conference Rm 11

CONTINUING EDUCATION COMMITTEE *(M)*
12:30-6:00 pm Conference Rm 9

EXECUTIVE COMMITTEE *(M)*
1:00-5:00 pm President's Suite

STRATEGIC PLANNING COMMITTEE *(M)*
1:00-5:00 pm Conference Rm 7

SYMPOSIA COMMITTEE *(M)*
1:00-5:00 pm Conference Rm 13

HP JOURNAL EDITORIAL BOARD *(M)*
3:00-6:00 pm Conference Rm 14

Sunday, June 29, 1997

HPS BRD OF DIRECTORS *(M)*
8:00 am-5:00 pm Conference Rm 13/14

VENUES COMMITTEE *(M)*
8:00 am-5:00 pm Conference Ste 530

ABHP BOARD MEETING *(M)*
9:00 am-5:00 pm Conference Rm 12

STANDARDS COMMITTEE *(M)*
10:00 am-4:00 pm Conference Rm 9

AAHP CONTINUING EDUCATION COMMITTEE *(M)*
1:00-5:00 pm Conference Suite 529

ANSI N43.4 *(M)*
1:00-6:00 pm Conference Rm 19

STUDENT BRANCH COUNCIL *(M)*
4:00-6:00 pm Conference Rm 16

Monday, June 30, 1997

AAHP EXECUTIVE COMMITTEE *(M)*
1:00 pm-??? pm Conference Rm 4

ACADEMIC EDUCATION COMMITTEE *(CC)*
Noon-2:00 pm Room 109

HPS STANDARDS COMMITTEE-CONT. LIMITS *(M)*
1:00-5:00 pm Conference Rm 8

PUBLICATIONS COMM *(CC)*
2:00-4:00 pm Room 110

STUDENT RECEPTION *(M)*
5:00-6:00 pm Conference Rm 13/14

Tuesday, July 1, 1997

SCIENCE & PUBLIC ISSUES *(M)*
7:15-8:15 am Conference Rm 13

LAB ACCRED-POLICY *(M)*
11:00 am-1:00 pm Conference Rm 7

HISTORY COMMITTEE *(CC)*
11:00 am-1:30 pm Room 109

PUBLIC EDUCATION COMMITTEE *(CC)*
11:00 am-1:30 pm Room 110

LEGISLATION AND REGULATION COMMITTEE *(CC)*
Noon-2:30 pm Room 111

ANSI/NORM WRK GROUP *(M)*
1:00-5:00 pm Conference Rm 13

ANSI 42.RM *(M)*
1:00-5:00 pm Conference Rm 14

ANSI N13.43 WRK GROUP *(CC)*
2:00-5:00 pm Room 110

Wednesday, July 2, 1997

ELDA ANDERSON BRKFST *(CC)*
7:30-9:30 am Room 108

AFFILIATES COMMITTEE *(CC)*
7:30-9:30 am Room 107

WRK GROUP N13.48 *(CC)*
8:30-11:30 am Room 111

LIAISON COMMITTEE *(CC)*
11:00 am-1:30 pm Room 109

SUMMER SCHOOL COMMITTEE *(CC)*
11:00 am-1:30 pm Room 110

ALL PROGRAM HP FACULTY MEETING *(CC)*
Noon-2:00 pm Fiesta A

NOMINATING COMM *(CC)*
Noon-2:30 pm Room 111

CHAPTER COUNCIL MTG *(M)*
1:00-2:00 pm Conference Rm 8

INTRODUCTION TO SCIENCE TEACHERS WORKSHOP *(M)*
2:00-5:00 pm Conference Rm 8

WRK GROUP N13.49 *(CC)*
3:00-5:00 pm Room 109

Thursday, July 3, 1997

AWARDS COMMITTEE *(M)*
7:30-9:00 am Conference Rm 1

LOCAL ARRANGEMENTS COMMITTEE *(CC)*
7:30-9:00 am Room 101

HPS BRD OF DIRECTORS *(M)*
8:00 am-Noon and
2:30 pm-?? Conference Rm 13/14

PROGRAM COMMITTEE *(M)*
2:30-5:00 pm Conference Rm 8

Health Physics Society Forty-Second Annual Meeting

San Antonio, Texas – June 29-July 3, 1997

Final Scientific Program

If a paper is going to be presented by other than the first author, the presenter's name is underlined.

NOTE: All sessions are in the San Antonio Convention Center

Monday

7:15-8:15 am *Room: River*

CEL-1 Recent Developments in Radiation Litigation. *David Wiedis; Jose and Wiedis*

7:15-8:15 am *Room: Mission*

CEL-2 How to Deal with Radiation Risk Perceptions and Resistance to Radiation Messages. *Raymond H. Johnson, Jr.; Communication Sciences Institute*

8:30 am-Noon *Room: Lila Cockrell Theatre*

MAM-A: Plenary Session: Public Information

Chair:
Richard Vetter, HPS President

8:30 AM Introductions and Welcome

8:45 AM **MAM-A.1** Communication at the Extremes: What Happened to the Center? *Margrit von Braun; University of Idaho*

9:45 AM **Break**

10:05 AM **MAM-A.2** Radiation Renaissance: The Public's Right to Know. *Margaret Maxey; University of Texas*

11:00 AM **MAM-A.3** Art and Technology in the Nuclear Age. *James L. Acord; Hanford Nuclear Sculpture Works*

Noon-1:30 pm *Room: HPS Exhibit Hall*

Lunch in Exhibit Hall for all Registrants and Opening of Exhibits

12:15-2:15 pm *PEP Program*

1:30-3 pm *Room: HPS Exhibit Hall*

MPM-A: Interactive Poster Session

MPM-A.1 Reengineering and Health Physics Within the Project Hanford Management Contract. *R. Ni, E. M. Atencio, J. W. Foster; Fluor Daniel Hanford, Inc.*

MPM-A.2 The Role of a Radiation Advisory Committee in a Radio-Analytical Laboratory. *R. Moore; US Department of Energy, Idaho Falls, ID*

MPM-A.3 Creating a Virtual Health Physics Office on the World Wide Web. *M. Bernstein, E. Wurtz; Merck Research Laboratories*

MPM-A.4 Radiation Detection Instrumentation Communication Across the Internet. *B. Rees, S. Willhoite; Los Alamos National Laboratory and Eberline Instruments*

Monday

MPM-A.5 Use of Alpha Spectroscopy at the Chemistry Metallurgy Research (CMR) Facility at Los Alamos National Laboratory (LANL). *T. L. Karl, C. L. Olson; Los Alamos National Laboratory*

MPM-A.6 CANCELLED

MPM-A.7 Thin Window Electret Ion Chambers for Calibrating the Siemens Dermopan 2 Dermitolgy Therapy Machine X-Ray Beam. *L. R. Stieff, P. Kotrappa, N. Harley; Rad Elec Inc. and NYU School of Medicine*

MPM-A.8 Electret Ion Chambers (EIC) for Measuring Dose Equivalents in Mixed Fields of Thermal Neutrons, Fast Neutrons and Gamma Radiation. *J. Clark, P. Kotrappa, L. Stieff; National Institute of Standards and Technology and Rad Elec Inc.*

MPM-A.9 Ion Transfer Electret Ion Chambers to Measure Alpha Surface Contamination Inside Pipes. *P. Kotrappa, L. R. Stieff; Rad Elec Inc.*

MPM-A.10 A Method for X-Ray Beam Exposure and Quality Measurements Using Electret Ion Chambers (EICs). *G. Redmond, J. Rodgers, P. Kotrappa, L. Stieff, M. Lundsten; Georgetown University, Rad Elec, Inc. and National Institutes of Health*

MPM-A.11 A Portable Cadmium Zinc Telluride Array Detector for Identification of Isotopes in Transport Vehicles. *R. L. Metzger, R. D. Stevens, K. A. Kodimer; RSE, Inc. and Ludlum Measurements, Inc.*

MPM-A.12 An Alpha-Beta-Gamma Swipe Counter Based Upon Digital Pulse Shape Discrimination. *W. H. Miller; University of Missouri-Columbia*

MPM-A.13 CANCELLED

MPM-A.14 Skin Dose Measurement with Microspec-2^{TM}. *H. H. Hsu, J. Chen, H. Ing, T. Clifford, T. McLean; Los Alamos National Laboratory and Bubble Technology Industries, Canada*

MPM-A.15 Background Radiation Doses at IPEN-CNEN/SP. *M. P. Sanches, A. Sahyun, G. M. A. A. Sordi, D. L. Rodrigues; Instituto de Pesquisas Energéticas e Nucleares, Brazil*

MPM-A.16 Photon Energy Response of Exposure Rate Meters in Use at the Los Alamos National Laboratory. *D. T. Seagraves, R. L. Bates, R. H. Olsher; Los Alamos National Laboratory*

MPM-A.17 Anisotropy and Geometry Correction Factors for Bare and D_2O Moderated ^{252}Cf and $^{241}Am/Be$ Sources using Monte Carlo Calculations. *R. H. Olsher, R. S. Clement; Los Alamos National Laboratory*

MPM-A.18 Monte Carlo Calculations of NRD Calibration Correction Factors for the Los Alamos Neutron Well. *R. H. Olsher, R. S. Clement, H. H. Hsu; Los Alamos National Laboratory*

MPM-A.19 Activated Materials - Operational Priorities for "No-Rad Added" Decisions. *D. C. Gregory, J. A. Chapman; Oak Ridge National Laboratory*

MPM-A.20 Characterization of Radiochemical Engineering Development Center Transuranic Waste at Oak Ridge National Laboratory. *L. Nguyen, L. F. Miller; Lockheed*

Monday

Martin Energy Research and The University of Tennessee

MPM-A.21 Upstream Segregation of Low Level Waste from Transuranic Waste. *R. S. Marshall, J. T. Voss, A. S. Wong; Los Alamos National Laboratory*

MPM-A.22 Cost-Effectiveness of Radiological Risk Reduction on the UMTRA Project - A Backward Glance. *M. L. Miller, C. B. Pomatto, R. E. Cornish; Roy F. Weston, Inc., Jacobs Engineering and US Department of Energy, Albuquerque, NM*

MPM-A.23 A Comparison of Field Screening Measurements and Laboratory Analysis for Uranium Contaminated Soils at the Alba Craft Facility and Vicinity Properties. *K. Kleinhans, L. F. Miller; MK-Ferguson of Oak Ridge Company and The University of Tennessee*

MPM-A.24 Leaching of ^{75}Selenium from Cement-Based Matrices. *M. J. Rudin, W. H. Johnson, M. J. Krauss; University of Nevada, Las Vegas and Bechtel Nevada*

MPM-A.25 Sensitivity Analysis of the Leaching Model in RESRAD. *M. H. Ebinger; Los Alamos National Laboratory*

MPM-A.26 Real Time Dosimetry in a Heterogenous Phantom of a One Year Old. *D. E. Hintenlang, M. W. Bower; University of Florida and US Army*

MPM-A.27 Use of Simultaneous Tolerance Intervals to Establish the Sensitivity of Whole Body Contamination Monitors to Radionuclide Intakes. *J. J. Shonka, R. E. Burns, Jr, G. C. Re, J. F. Barry; Shonka Research Associates, Inc. and New York Power Authority, White Plains and Buchanan, NY*

MPM-A.28 The Implementation of a Self Serve Whole Body Counting Program. *R. S. Bell, K. S. Thind; Ontario Hydro, Canada*

MPM-A.29 The Early Standardization of Human Anatomical and Physiological Values for Radiation Dose Calculations: Debates and Determinations at the 1949 Chalk River Conference on Permissible Doses. *K. J. Kearfott, L. M. Calkins; University of Michigan*

MPM-A.30 Draft ANSI N13.39 - American National Standard for Design of Internal Dosimetry Programs - Minimum Acceptable Requirements. *C. D. Berger, D. E. Bihl, E. M. Brackett, D. R. Fisher, F. E. Gallagher, J. P. Griffin, R. B. Holtzman, W. S. Loring, K. S. Thind; IEM, Inc., Pacific National Northwest Laboratory, Columbus, OH, University of California, Irvine, MJW Corporation, Downers, Grove, IL, WSRC and Ontario Hydro, Canada*

MPM-A.31 Department of Energy's (DOE) Radiation Exposure Monitoring System (REMS) and 1992-1994, 1995 (Draft) Annual Radiation Exposure Reports. *N. Rao, C. R. Jones, R. Loesch, D. Hagemeyer; US Department of Energy, Washington, DC and Science Applications International Corporation*

MPM-A.32 Review of Occupational External Exposure History at a Moderate-Sized Academic University. *V. J. Polyak; Texas Tech University*

Monday

MPM-A.33 Policy Implications of the Radiation Dose Reconstruction Initiative for Hiroshima and Nagasaki Survivors in the United States, 1971-1976. *L. M. Calkins, K. J. Kearfott; University of Michigan*

MPM-A.34 Accelerator Sources for Boron Neutron Capture Therapy: Operating Near the Lithium (P,N) Reaction Threshold Energy. *R. J. Kudchadker, J F. Harmon, J. F. Kunze, Y. D. Harker; Idaho State University and Idaho National Engineering Laboratory*

MPM-A.35 Preliminary Ecological Risk Assessment of the Mexican Spotted Owl Under a Spatially-Weighted Foraging Regime at the Los Alamos National Laboratory. *A. F. Gallegos, G. J. Gonzales, J. D. Huchton, K. D. Bennett, L. E. Pratt; Los Alamos National Laboratory*

MPM-A.36 Tritium Monitor Calibration at Los Alamos National Laboratory. *C. W. Bjork, D. J. Aikin, T. W. Houlton; Los Alamos National Laboratory*

MPM-A.37 Monitoring for Criticality Safety in the Chornobyl Unit 4 Nuclear Fuel Debris. *R. I. Scherpelz, J. E. Tanner, D. K. Kreid, J. P. Schmidt; Pacific Northwest National Laboratory*

MPM-A.38 Plutonium Wound Analyses at Los Alamos National Laboratory. *R. W. Martin, R. A. Metcalf, M. M. Vigil; Los Alamos National Laboratory*

Works in Progress Posters

MPM-A.39 Radiation Doses Received by Former Workers at the Rocky Flats Nuclear Weapons Facility. *R. B. Falk, W. C. Gottschall, C. V. Tuck, J. M. Aldrich, D. E. Hilmas; DynCorp of Colorado*

MPM-A.40 Design of an Epithermal Neutron Beam for Neutron Capture Therapy. *L. H. Miles; University of Missouri-Columbia*

MPM-A.41 Anisotropy of Alpha-N Neutron Sources. *T. M. de Castro; Lawrence Berkeley National Laboratory*

MPM-A.42 Low Level Ionizing Radiation - A Hazard or a Benefit? *P. A. Jenkins, J. F. Kunze, R. J. Kudchadker; Idaho State University*

MPM-A.43 Countering the Linear Hypothesis. *A. N. Tschaeche; Nuclear Standards Unlimited*

MPM-A.44 The Use of Tungsten in Shielding High Energy Nuclides in Nuclear Medicine. *R. L. Green, J. L. Coffey, D. W. Pellicciarini, C. K. Fitz, T. J. Domiter, B. B. Zhu, M. Fu; Syncor International Corporation*

MPM-A.45 Radiation Protection Training Using an Interactive Computer Program. *A. E. Zea, L. D. Villegas; University of Southern California*

MPM-A.46 USC Radiation Protection Web Site. *L. Wade, P. Connolly, A. Zea; University of Southern California*

MPM-A.47 Efficiency Analysis of Parallel Operating Facility Air Monitoring Systems at the Nuclear Science Center. *R. S. Steffler; Texas A&M* University

MPM-A.48 Use of Personal Air Samplers as Indicators of Intake at Sandia National Laboratories. *C. A. Potter, J. Mallon, K. A. Roberts; Sandia National Laboratories and Maine Yankee Atomic Power Co.*

MPM-A.49 Dealing Effectively with Potential PAAA Noncompliance Issues. *D. H. Denham, M. P. Moeller,*

D. E. Gergely, V. E. Shockley; Bechtel Hanford, Incorporated and Dade Moeller & Associates, Inc.

MPM-A.50 Non-Time Critical Removal Action, Belding Warehouse Superfund Site. *K. D. Anderson, F. E. Mangold; Environmental Chemical Corporation*

MPM-A.51 Estimating Radioactive Material Concentrations in Non-Uniform Distributions: An Analysis of Sampling vs In Situ Measurement. *L. M. Scott, H. A. Holmes, F. Bronson; Louisiana State University and A & M College and Canberra Nuclear Products Group*

MPM-A.52 Characterization Radiation Surveys using GPS and Ultrasonic Positioning. *C. R. Flynn, M. S. Blair, R. J. Selfridge; CHEMRAD Tennessee Corporation*

MPM-A.53 An Automated Interior Survey System for Expedited Simultaneous Alpha and Beta Scanning of Floors and Walls. *C. R. Flynn, M. S. Blair, P. Egidi; CHEMRAD Tennessee Corporation and Oak Ridge National Lab*

MPM-A.54 Monte Carlo Simulation of Beta Particle Transmission through Material for Real and Hypothetical Beta Energy Spectra. *A. N. Ismail, G. Chabot; University of Massachusetts, Lowell*

MPM-A.55 Assessing the Impact of Uranyl Mineralogy in the U-CA-PO^4 System on the Environmental Availability of Uranium. *A. G. Sowder, S. B. Clark, R. A. Fjeld; Clemson University and Washington State University*

MPM-A.56 Development of Field Standards for NORM Assays. *M. J. Fontenot, L. M. Scott; Louisiana State University and A & M College*

3-3:45 pm Room: Fiesta D

MPM-B: Risk Analysis

Co-Chairs:

Stuart Altman and Jay Maisler

3:00 PM MPM-B.1
Should Diogenes Drop His Lantern? *T. L. Aldridge; US Department of Energy, Richland, WA*

3:15 PM MPM-B.2
Risk Assessments for Transportation of Spent Nuclear Fuel and Transuranic Waste Within Idaho. *C. Deng, J. L. Downs, D. P. Wells; State of Idaho, Boise and Idaho Falls, and Idaho State University*

3:30 PM MPM-B.3
The Influence of Waste Characterization on Performance Assessment Uncertainty Analyses. *L. K. Yong, J. A. Chapman, G. Cunningham; Oak Ridge National Laboratory*

3-5:30 pm Room: Fiesta AB

MPM-C: Special Session: Optically Stimulated Luminescence Dosimetry

Co-Chairs:

Craig Yoder and Steve McKeever

3:00 PM MPM-C.1
Some Fundamentals of Optically Stimulated Luminescence Dosimetry. *S.W. S. McKeever; Oklahoma State University*

3:30 PM MPM-C.2
Retrospective Radiation Dosimetry Using Optically Stimulated Luminescence on Natural Materials and Ceramics for Assessing Accident Doses. *L. Bøtter-Jensen; Risø National Laboratory, Denmark*

Monday

3:45 PM **MPM-C.3**
Optically Stimulated Luminescence Dosimetry. *B. L. Justus, M. A. Miller, A. L. Huston; Naval Research Laboratory*

4:00 PM **MPM-C.4**
Cooled Optically Stimulated Luminescence (COSL) with Aluminum Oxide. *M. R. Salasky, D. E. Morin; Landauer, Inc.*

4:15 PM **Break**

4:30 PM **MPM-C.5**
A Dosimetry System Based on Delayed Optically Stimulated Luminescence (DOSL). *R. C. Yoder, M. R. Salasky; Landauer, Inc.*

4:45 PM **MPM-C.6**
Pulsed Optically Stimulated Luminscent (POSL) Dosimetry Using Al_2O_3:C. *M. S. Akselrod, S. W. S. McKeever, V. H. Whitley; Oklahoma State University*

5:00 PM **MPM-C.7**
Development of a Miniature Optically Stimulated Luminescence Reader for Alumina. *S. D. Miller, R. C. Yoder; Battelle Pacific Northwest Laboratories and Landauer Inc.*

5:15 PM **MPM-C.8**
Quality Assurance Measurement for TL and OSL Using Al_2O_3. *A. C. Lucas, M. S. Akselrod, S. W. S. McKeever; Stillwater Sciences and Oklahoma State University*

3-4 pm *Room: Fiesta E*

MPM-D: Biokinetics/Bioeffects

Co-Chairs:
Raymond Guilmette and Paul Voillequé

3:00 PM **MPM-D.1**
Health Physics Implications of Studies of Brief Irradiation of Reproductive Cells Utilizing the Mouse Chimera Assay. *O. G. Raabe, T. Straume, L. M. Wiley; University of California, Davis and Lawrence Livermore National Laboratory*

3:15 PM **MPM-D.2**
Determination of Uptake and Efficacy of Compounds for Boron Neutron Capture Therapy. *T. E. Byrne, L. F. Miller, R. Martin, D. Duckworth, M. Terzaghi-Howe, G. W. Kabalka; Roane State Community College, The University of Tennessee and Lockheed Martin Energy Research*

3:30 PM **MPM-D.3**
A Retrospective Study of Medical Findings Among Plutonium Injectees. *J. H. Stebbings; Midwest Epidemiology Associates*

3:45 PM **MPM-D.4**
Bone Tumor Location in Dogs Given Skeletal Irradiation by ^{239}Pu or ^{226}Ra. *R. D. Lloyd, G. N. Taylor, S. C. Miller, F. W. Bruenger, W. S. S. Jee; University of Utah*

3-5 pm *Room: River*

MPM-E: Decommissioning and Release Criteria Government Section Session

Chair:
James Yusko

3:00 PM **MPM-E.1**
U. S. Nuclear Regulatory Commission Radiological Criteria for Decommis-

sioning. *J. T. Greeves; US Nuclear Regulatory Commission, Washington, DC*

3:30 PM **MPM-E.2**
DOE Control and Release Requirements for Property Containing Residual Radioactive Material. *A. Wallo, III, H. T. Peterson, Jr.; US Department of Energy, Washington, DC*

4:00 PM **Break**

4:30 PM **MPM-E.3**
Developing Release Standards and Criteria for Scrap Metal. *J. M. Karhnak, US Environmental Protection Agency, Washington, DC*

5:15-6:15 pm Government Section Business Meeting

3-5:15 pm *Room: Mission*

MPM-F: Regulatory/Legal Issues

Co-Chairs:
Carolyn Owen and Gene Runkle

3:00 PM **MPM-F.1**
ANSI/HPS NORM Standard - Update of Development Activities. *J-C. Dehmel, S. Y. Chen; S. Cohen & Associates, Inc. and Argonne National Laboratory*

3:15 PM **MPM-F.2**
A Suggested Series of Protocols for Dealing with Radionuclide Contamination Under the Comprehensive Environmental Response Compensation & Liability Act (CERCLA). *P. A. Giardina, E. J. Stamataky; US Environmental Protection Agency, New York, NY*

3:30 PM **MPM-F.3**
The U.S. Department of Energy's (DOE) Proposed Amendment to Title 10 Code of Federal Regulations Part 835. *J. D. Foulke, P. V. O'Connell, J. L. Rabovsky; US Department of Energy, Washington, DC*

3:45 PM **MPM-F.4**
Reduction of Regulatory Dose Limits: A Case Study for the Republic of Korea. *J-S. Lee, M-S. Yim; Korea Institute of Nuclear Safety and North Carolina State University*

4:00 PM **Break**

4:30 PM **MPM-F.5**
EG&G Mound Applied Technologies Self Assessment Program for Maintaining Compliance with 10 CFR Part 835. *K. M. Hall, K. E. Sirois, S. Sullivan; US Department of Energy, Miamisburg, OH and EG&G Mound Applied Technologies*

4:45 PM **MPM-F.6**
Radioactive Sealed Source Accountability—A Risk-Based Approach. *K. L. Shingleton, D. W. Lee; Lawrence Livermore National Laboratory and Los Alamos National Laboratory*

5:00 PM **MPM-F.7**
Public Exposure Limits Using Model-Independent Strategies. *K. L. Mossman, M. A. Nessel; Arizona State University*

Tuesday

7:15-8:15 am *Room: River*

CEL-3 Ten Principles and Ten Commandments for Radiation Protection. *Daniel J. Strom; Pacific Northwest National Laboratory*

7:15-8:15 am *Room: Mission*

CEL-4 Radiation Dose from Radiopharmaceuticals Administered During Pregnancy and Breast Feeding. *Michael G. Stabin; Oak Ridge Institute for Science and Education*

8:30 am-12:30 pm *Room: 107/ Exhibit Hall*

TAM-A: Student I

Co-Chairs:
Wesley E. Bolch and Richard Brey

NOTE: All student presenters will give a 2 minute oral summary of their presentation before poster viewing begins.

ENVIRONMENTAL

TAM-A.1 Field Study of Passive Sampling of Tritiated Water Vapor in Air. *T. Mott, J. Davis, T. Gesell, D. Wells, D. Walker, P. Ritter; Idaho State University, INEL Oversight Program and LMTCO*

TAM-A.2 Determination of Anomalous Environmental Tritium Source at the Savannah River Site. *M. K. McGrath, P. D. Fledderman; Rowan College and Westinghouse Savannah River Company*

TAM-A.3 The Influence of Particle Size on Radionuclide Transport in Desert Washes During Flash Floods. *P. S. Morris, W. H. Johnson, M. J. Rudin; University of Nevada, Las Vegas*

TAM-A.4 Radionuclide Content of Upper Gysum Wash Sediments. *M. M. Seminoff, W. H. Johnson, M. J. Rudin; Green Valley High School and University of Nevada, Las Vegas*

TAM-A.5 A Comparison of Minimum Detectable and Proposed Maximum Allowable Soil Concentration Cleanup Levels for Selected Radionuclides. *S. M. Rohrer, K. J. Kearfott; University of Michigan*

TAM-A.6 Initial Determination of ^{222}RN Removal Constants for Exhalation in Undisturbed Desert Soil and Accelerated Loss During Soil Sample Drying. *R. R. Benke, K. J. Kearfott; University of Michigan*

TAM-A.7 Sorption of ^{75}Selenium by Cement-Based Matrices. *E. A. Short, M. J. Rudin, W. H. Johnson; University of Nevada, Las Vegas*

TAM-A.8 The Use of Catch Boxes to Minimize Environmental Contamination from Testing Depleted Uranium Tank Ammunition. *T. P. Oxenberg; Georgia Institute of Technology*

TAM-A.9 Radionuclides in Eggshells from Barn Swallows Nesting Near Radioactive Liquid Waste Leaching Ponds. *H. C. Hulse, R. R. Brey, R. G. Mitchell, R. W. Warren, T. F. Gesell; Idaho State University and Environmental Science and Research Foundation*

TAM-A.10 Kinetics of the Distribution of I-125 in Bovine Milk During Aging. *N. Parvin, R. R. Brey, R. W. McCune, T. F. Gesell; Idaho State University*

TAM-A.11 CANCELLED

Tuesday

TAM-A.12 Attack of the Science Fiction Movie - Evolution of Societal Attitudes about Radiation as Reflected by Popular Culture 1948-1965. *C. J. Branch, K. J. Kearfott; University of Michigan*

TAM-A.13 Effectiveness of Molecular Sieve Adsorbents for Collecting Water Vapor in Air for Tritium Analysis. *L. J. Davis, T. F. Gesell, R. R. Brey, D. W. Walker, P. D. Ritter; Idaho State University, State of Idaho and Lockheed Martin Idaho Technologies*

DOSIMETRY

TAM-A.14 Effects of Intake Function Shape on Internal Dose Estimations. *D. Manuca, K. J. Kearfott; University of Michigan*

TAM-A.15 Measurement of a Pulsed Neutron Field Using a Bonner Sphere System. *J. R. Weldy, A. Justus, K. J. Kearfott; Argonne National Laboratory and University of Michigan*

TAM-A.16 Evaluation of the Alnor RAD-101 Electronic Personal Dosimeter. *D. L. Collaer, H. D. Snowder, T. F. Gesell, R. R. Brey; Idaho State University and Lockheed Martin Idaho Technologies Company*

TAM-A.17 Neutron Energy Correction to Track Etch Dosimetry Using Albedo TLD Results. *Y. Yu, W. H. Casson, R. T. Devine; Los Alamos National Laboratory*

TAM-A.18 Quantifying Heat Capacity of Thermoluminescent Dosimeters Using INSB Infrared Measurements. *G. E. Jones; San Jose State University*

TAM-A.19 Effect of Light Transport on TLD Dose Discrimination Methods. *A. Badano, E. Wagner, K. J. Kearfott, M. J. Flynn; University of Michigan and MJF Henry Ford Health System*

TAM-A.20 Experimental Evaluation of Thermoluminescence Glow Curve Algorithm. *E. C. Wagner, K. J. Kearfott; University of Michigan*

TAM-A.21 Simulation of Factors Affecting Performance of a Novel Method for Depth Dose Determination Using Pulsed Laser Heating of Thermoluminescent Dosimeters. *B. A. Busby, K. J. Kearfott, E. Samei, D. M. Hamby; The University of Michigan*

TAM-A.22 Polynomial Expressions of Electron Depth Dose in Various Materials. *J. L. Wood, E. C. Wagner, E. C. Deogracias, K. J. Kearfott; University of Michigan*

TAM-A.23 A Mathematical Model of Transport and Regional Uptake of Radioactive Gases and Vapors in the Human Respiratory System. *I. Baek, J. W. Poston, Sr.; Texas A&M University*

TAM-A.24 A Small-Scale Dosimetry Study of Radioactive Stents Used in the Treatment of Restenosis. *V. Sehgal, W. E. Bolch, L. Bouchet, Z. Li; University of Florida*

TAM-A.25 Bone Remodeling Effects on the Dosimetry of Surface Seeking Transuranic Nuclides. *D. A. Halter, J. W. Poston; Texas A&M University*

Tuesday

TAM-A.26 Nuclear Magnetic Resonance Imaging for Use in Studying the Microstructure and Radiation Dosimetry of Trabecular Bone. *P. W. Patton, D. W. Jokisch, W. E. Bolch; University of Florida*

TAM-A.27 A Comparison of Models Utilized to Assess Electron Absorbed Fractions in Trabecular Bone. *D. W. Jokisch, P. Patton, W. E. Bolch; University of Florida*

TAM-A.28 Bone Marrow Dosimetry for the Mouse Femur Using NMR Microimages. *L. G. Bouchet, W. E. Bolch, S. M. Goddu, R. W. Howell, D. V. Rao; University of Florida and UMDNJ-New Jersey Medical School*

TAM-A.29 Toxicity Comparison Between ^{239}Pu and ^{226}Ra. *S. Xiao, P. G. Groer; University of Tennessee*

8:30-10 am *Room: 101*

Repeated 10:30 am-Noon

TAM-B1: Special Session: AAHP Strategic Planning Session I–Enhance Recognition of CHPs and the AAHP and ABHP

Discussion Leader: Ken Kase

8:30-10 am *Room: 102*

Repeated 10:30 am-Noon

TAM-B2: Special Session: AAHP Strategic Planning Session II–Improve Communications to CHPs and Others

Discussion Leader: Carol Berger

8:30 am-Noon *Room: 108*

Repeated 10:30 am-Noon

TAM-B3: Special Session: AAHP Strategic Planning Session III–Increase the Value of AAHP Membership

Discussion Leader: Bob Casey

8:30 am-Noon *Room: River*

TAM-C: Special Session: Radiation Policy and Standards

Co-Chairs:

S. Y. Chen and Cindy Jones

8:30 AM **TAM-C.1**
Federal Radiation Protection Guidance and Environmental Risk Management Policy. *A. C. B. Richardson; US Environmental Protection Agency, Washington, DC*

9:00 AM **TAM-C.2**
Radiation Protection of the Public and the Environment—DOE Requirements. *A. Wallo III, H. T. Peterson, Jr.; US Department of Energy, Washington, DC*

9:30 AM **TAM-C.3**
MARSSIM, The Multi-Agency Radiation Survey and Site Investigation Manual. *D. Alberth, M. Doehnert, K. Duvall, L. Fragoso, K. Martilla, R. A. Meck, C. Petullo; USACHPPM, US Environmental Protection Agency, Washington, D.C., US Department of Energy, Washington, D.C., NAVSEA DET RASO and US Nuclear Regulatory Commission, Washington, DC*

10:00 AM **Break**

10:30 AM **TAM-C.4**
Release Criteria: A Need for Consistent Radiation Standards and Policy. *R. E. McBurney; Texas Department of Health*

Tuesday

11:00 AM **TAM-C.5**
Clearance of Metals Containing Residual Radioactivity. *J. A. MacKinney; US Environmental Protection Agency, Washington, DC*

11:30 AM **TAM-C.6**
Development of Environmental Remediation Standards by the HPS Standards Committee. *S. Y. Chen, J. R. Stencel; Argonne National Laboratory and Princeton University*

8:30-10:15 am Room: Mission

TAM-D: Operational Health Physics I

Co-Chairs:
John Nagy and John Nichelson

8:30 AM **TAM-D.1**
Evaluation of a Hybrid $^{32}P/^{125}I$ Shield for Use in Biomedical Research. *P. J. Meechan, G. M. Sturchio; Merck Research Laboratories*

8:45 AM **TAM-D.2**
Practical Considerations of C-14 Air Sampling Using the EG&G EL 700 Air Monitoring System. *G. R. King, G. M. Sturchio; Merck Research Laboratories*

9:00 AM **TAM-D.3**
Olympic Health Physics. *R. D. Ice; Georgia Institute of Technology*

9:15 AM **Break**

9:45 AM **TAM-D.4**
Avoid This Radiation Protection Jargon. *D. J. Strom; Pacific Northwest National Laboratory*

10:00 AM **TAM-D.5**
Radiation Safety "Jeopardy" Training Program. *E. M. Crim, G. E. Socha; DowElanco*

8:30-11:15 am Room: Fiesta AB

TAM-E: Special Session: Multi-Agency Radiation Survey and Site Investigation Manual

Chair:
Colleen Petullo

8:30 AM **TAM-E.1**
Multi-Agency Radiation Survey & Site Investigation Manual (MARSSIM): Overview/Update. *C. F. Petullo, M. Doehnert, A. Wolbarst, R. Meck, K. Duvall, L. Fragoso, K. Martilla, D. Alberth, S. Keith, J. Richards; US Environmental Protection Agency, Las Vegas, NV, Atlanta, GA and Washington, DC, US Nuclear Regulatory Commission, Washington, DC, US Department of Energy, Washington, DC, NAVSEA, Yorktown, VA and USACHPPM, ATSDR-DT*

8:45 AM **TAM-E.2**
Major Differences Between Final Survey Methods of NUREG-CR-5849 and MARSSIM. *D. N. Fauver; US Nuclear Regulatory Commission, Rockville, MD*

9:00 AM **TAM-E.3**
The Multiagency Radiation Survey and Site Investigation Manual (MARSSIM) and the Environmental Protection Agency. *C. F. Petullo, M. Doehnert, A. Wolbarst, R. Meck, K. Duvall, L. Fragoso, K. Martilla, D. Alberth, S. Keith, J. Richards US Environmental Protection Agency, Las Vegas, NV, Atlanta, GA and Washington, DC, US Nuclear Regulatory Commission, Washington, DC, US Department of Energy, Washington, DC, NAVSEA, Yorktown, VA and USACHPPM, ATSDR-DT*

9:15 AM **TAM-E.4**
DOE Radiological Survey Manual and the Multi-Agency Radiation Survey and Site

Tuesday

Investigation Manual. *A. Wallo III, H. T. Peterson, Jr., K. Duvall, R. Coleman, J. Williams, R. Carrier; US Department of Energy, Washington, DC and Oak Ridge National Laboratory*

9:30 AM **TAM-E.5**
The Application of MARSSIM at Air Force Installations. *J. L. Coleman; Brooks AFB*

9:45 AM **Break**

10:15 AM **TAM-E.6**
Results of Preliminary Field Test at a Thorium-Contaminated Site using MARSSIM Survey Design. *E. W. Abelquist; Oak Ridge Institute for Science and Education*

10:30 AM **TAM-E.7**
Application of MARSSIM Methodology at a Depleted Uranium Site. *C. V. Gogolak, K. M. Miller, P. Shebell; US Department of Energy, New York, NY*

10:45AM Question and Answer Panel

8:30-11 am Room: Fiesta D

TAM-F: Special Session: Commemorating the 50th Anniversary of the Health and Safety Laboratory (HASL)/Environmental Measurements Laboratory (EML)

Co-Chairs:
M. D. Erickson and Harold Beck

8:30 AM **TAM-F.1**
The Origin and First Decade. *M. Eisenbud; Chapel Hill, NC*

9:00 AM **TAM-F.2**
Truth and Beauty in Measurement. *N. H. Harley; New York University School of Medicine*

9:30 AM **Break**

10:00 AM **TAM-F.3**
The Laboratory in Transition: The Period of the Eighties. *E. P. Hardy; Pleasantville, NY*

10:30 AM **TAM-F.4**
EML in the Period of the Post Cold War-Heightened Concern for Decontamination of Nuclear Facilities and Downsizing. *P. W. Krey; Hillsdale, NJ*

12:15-2:15 pm PEP Program

1:30-5 pm Room: River/Exhibit Hall

TPM-A: Student II

Co-Chairs:
Patrick Papin and Nolan Hertel

NOTE: All student presenters will give a 2 minute oral summary of their presentation before poster viewing begins.

MEDICAL

TPM-A.1 Quantitating Radiation Induced DNA Breaks by Capillary Electrophoresis. *B. J. Morabito, R. D. Ice, Z. J. Lesnikowski, R. F. Schinazi; Georgia Institute of Technology and Emory University/VA Medical Center*

TPM-A.2 Multisphere Neutron Spectra Measurements Near a 25-MV Medical Accelerator. *K. G. Veinot, N. E. Hertel, K. W. Brooks; Georgia Institute of Technology and Loughlin Radiation/Oncology Center*

TPM-A.3 A Method to Estimate the Age of Cyclotron Foils. *A. K. Jarwan, K. J. Kearfott, V. A. McCormick, D. Brooks; University of Michigan and William Beaumont Hospital*

Tuesday

TPM-A.4 Neutron Activation of Radiotherapy Accessories of the Linear Accelerator. *S. Guo, P. Ziemer, R. Landolt, D. Hung; Purdue University and St. Elizabeth Hospital*

TPM-A.5 Radiological Hazards of Iodine-131 Therapy. *J. M. Brindle, C. M. Plott, J. E. Watson, Jr.; University of North Carolina at Chapel Hill and Bowman Gray School of Medicine*

TPM-A.6 Iodine Neutron Capture Therapy. *K. F. Ahmed, A. G. Stephens, R. D. Spall, R. R. Brey, J. S. Bennion; Idaho State University*

TPM-A.7 Investigation of Radiation Doses Lethal to Virus Populations. *K. R. Marlow, R. R. Brey, L. D. Farrell, J. F. Harmon, R. D. Spall; Idaho State University*

TPM-A.8 Patient Dose and Detectabliity of Lung Nodules in Digital Chest Radiographs. *E. Samei, M. J. Flynn, K. J. Kearfott; University of Michigan and Henry Ford Health System*

TPM-A.9 Electron Absorbed Fractions for Use in Pediatric Internal Dosimetry Under the MIRD Schema. *P. Blanco, W. E. Bolch, L. G. Bouchet; University of Florida*

TPM-A.10 A Computer-Based Radiation Safety Records Management System for Positron-Emission Tomography Dose Calibrators. *M. A. Cloud, I. S. Hamilton, R. J. Emery, N. A. Mullani; Texas A&M University, University of Texas Health Science Center and Internal Medicine, Cardiology*

TPM-A.11 Feasibility Study of ^{99m}Tc Production by Neutron Capture and Solvent Extraction at a 1-MW TRIGA Facility. *D. D. Hearne, I. S. Hamilton, W. D. Reece, D. S. O'Kelly; Texas A&M University*

TPM-A.12 Using Laser Isotope Separation for the Supply of Medical and Research Isotopes. *D. A. Puglisi, J. W. Eerkens; University of Missouri-Columbia*

TPM-A.13 I-131 Waste Stream in the Sanitary Sewer System of the University of Florida. *D. Kenyon, D. Hintenlang; University of Florida*

INSTRUMENT

TPM-A.14 An Integrating Ultraviolet-B Dosimeter Using Phototransferred Thermoluminescence in AL_2O_3:C. *L. E. Colyott, S. W. S. McKeever, M. S. Akselrod; Oklahoma State University*

TPM-A.15 Evaluation of a Dynamic Bias Technique in Neutron-Photon Pulse Shape Discrimination by Using a Neural Network Classifier. *Z. Cao, L. F. Miller, M. A. Buckner; University of Tennessee, Knoxville and Lockheed Martin Energy Research*

TPM-A.16 Evaluation of a 2-PI Liquid Scintillation Whole Body Counter Using MCNP. *F. Mireles, W. H. Miller; University of Missouri-Columbia*

TPM-A.17 Use of a Gridded Ionization Chamber for Rapid Quantification of Arid Soil Samples. *D. R. Hogge, P. Koch, M. J. Rudin; University of Nevada-Las Vegas and Bechtel Nevada Corporation*

Tuesday

TPM-A.18 Wall Effects Observed in Tissue Equivalent Proportional Counters. *S. E. Rademacher, T. B. Borak, C. Zeitlin, L. Heilbronn, J. Miller; Colorado State University and Lawrence Berkeley Laboratory*

TPM-A.19 Uniformity of Photomultiplier Tube Response to LED Pulses. *D. M. DeMore, M. Spisar, R. A. Mintzer, D. Henry, J. N. Aarsvold, K. J. Kearfott; University of Michigan, University of Chicago and ADIT Company*

TPM-A.20 Adaptation of a Backscattered X-Ray Detection and Imaging System to Efficient Mobile Landmine Detection. *J. A. Jacobs, A. M. Jacobs; University of Florida*

TPM-A.21 Design of a Gamma Spectroscopy System using Low-Speed Analog Interface Cards and Labview^{TM} Software. *L. M. Thomsen, W. E. Bolch; University of Florida*

TPM-A.22 Practical Application of Radiation Detectors. *E. C. Deogracias, J. L. Wood, K. J. Kearfott, A. M. Jackson; University of Michigan and Radiation Safety Service*

TPM-A.23 Development and Revision of a Senior/First-Year Graduate Student Laboratory Course in Radiation Detection and Instrumentation. *T. H. Wagner, W. E. Bolch; University of Florida*

TPM-A.24 A Survey of an Air Monitoring Program Administered During the Plutonium Glove Box Project. *M. B. Lee, T. B. Borak, W. J. Munyon; Los Alamos National Laboratory, Colorado State University and Argonne National Laboratory*

TPM-A.25 Development of a Screened Cathode Gas Flow Proportional Counter for In Situ Field Determination of Alpha Contamination in Soil. *S. P. Bush, D. M. Hamby; University of Michigan*

TPM-A.26 Measurements of Bioelectrical and Biomagnetic Signals and Properties. *M. E. Connell, K. J. Kearfott; University of Michigan*

2:30-5:30 pm Room: Fiesta E

TPM-B: Special Session: AAHP Strategic

Planning Session IV–Report and Discussion of Morning Sessions

Discussion Leader: Ken Kase

4:00-5:30 pm AAHP Business Meeting

2:30-4:30 pm Room: 107

TPM-C: Medical Health Physics

Co-Chairs:

Elizabeth Ullrich and David Pellicciarini

2:30 PM TPM-C.1
Occupational Radiation Doses at a Large Tertiary Medical Center. *K. L. Classic, R. J. Vetter; Mayo Foundation*

2:45 PM TPM-C.2
Licensing the Use of Radioactive Materials in Conjunction with Intravascular Brachytherapy (IVB). *D. R. Jisha, D. W. Wood, P. H. Myers; Texas Department of Health*

3:00 PM TPM-C.3
A Comparative Study of Experimental Real-Time Dosimetry Data and Monte Carlo Transport Simulations in Estimating Organ Doses During Pediatric X-Ray Procedures. *R. A. Reyes, W. E. Bolch, L. Bouchet, K. Hintenlang; University of Florida*

Tuesday

3:15 PM **Break**

3:45 PM **TPM-C.4**
Loading a Model B Gamma Knife - The Mayo Experience. *T. L. Mays, K. L. Classic; Mayo Foundation*

4:00 PM **TPM-C.5**
An Uncertainty Analysis of Absorbed Dose Estimates for a Brain Receptor Imaging Agent. *B. Aydogan, W. E. Bolch, L. G. Bouchet; University of Florida*

4:15 PM **TPM-C.6**
Health Physics Challenges Associated with an Interictal Brain Spect Program. *T. L. Mays, J. S. Braun; Mayo Foundation*

2:30-4:45 pm *Room: Mission*

TPM-D: Operational Health Physics II

Co-Chairs:
John Nagy and John Nichelson

2:30 PM **TPM-D.1**
Optimization of Whole-Body and Hand and Foot Personnel Contamination Monitors within the Chemistry Metallurgy Research (CMR) Facility at Los Alamos National Laboratory (LANL). *T. L. Karl, C. L. Olson; Los Alamos National Laboratory*

2:45 PM **TPM-D.2**
Statistical Analysis of a Radiological Site Characterization Plan. *C. A. England, J. E. Turner; Lockheed Martin Energy Systems*

3:00 PM **TPM-D.3**
The Role of Surveillances in Maintaining Quality in an Operational Health Physics Program. *M. Zaidi, R. Moore; US Department of Energy, Idaho Falls, ID*

3:15 PM **TPM-D.4**
Using Technology to Reengineer Health Physics at Los Alamos National Laboratory Plutonium Facility. *B. Rees, P. Hoover, K. Olson; Los Alamos National Laboratory*

3:30 PM **Break**

4:00 PM **TPM-D.5**
An Effective Radiation Protection Oversight Program for Los Alamos National Laboratory Environmental Restoration Project Subcontractors. *P. J. LaFrate, Jr, M. J. Peifer; Los Alamos National Laboratory*

4:15 PM **TPM-D.6**
Laser Incidents at a Large Research Institution. *S. Farmer; Purdue University*

4:30 PM **TPM-D.7**
Emergency Response Modeling for Local Emergency Planners. *R. P. Durante, D. W. Walker; State of Idaho INEL Oversight Program (presented by D. P. Wells)*

2:30-4:30 pm *Room: Fiesta AB*

TPM-E: Power Reactor Section Session

Co-Chairs:
Richard Doty and Michael Slobodien

2:30 PM **TPM-E.1**
Installation and Use of a Remote Radiological Work Control System. *R. V. Warnock, R. Corbett, C. Hays, R. Johnson, J. Joyce, P. Obradovic; San Onofre Nuclear Generating Station*

2:45 PM **TPM-E.2**
ALARA at the Davis Besse Nuclear Power Station: What it is; What it isn't; Why we do it; and How we do it. *R. A. Greenwood, J. M. Priest, Jr.; Toledo Edison Company*

Tuesday

3:00 PM **TPM-E.3**
Characterization of a Cs-137 Irradiator Used for Electronic Dosimeter and Instrument Calibrations. *J. T. Rolph, T. Ushino, G. deBeaumont, R. Schanzenbach; Southern California Edison Company*

3:15 PM **TPM-E.4**
US Nuclear Industry Dose Trends. *R. Andersen; Nuclear Energy Institute*

3:30 PM **Break**

4:00 PM **TPM-E.5**
Occupational Dose Reduction Studies at the North American Regional Technical Center-ISOE. *D. W. Miller, M. Hulin; Clinton Power Station and University of Illinois*

4:15 PM **TPM-E.6**
Sister Plant Dose Comparisons in International Occupational Dose Studies. *M. Hulin, D. W. Miller; University of Illinois and Clinton Power Station*

4:30-5:30 pm Power Reactor Section Meeting

2:30-5:15 pm Room: Fiesta D

TPM-F: Special Session: Recent Radiation Measurement Activities of the NCRP, ICRP and ICRU, Sponsored by the NCRP

Chair:
Charles Meinhold

2:30 PM **TPM-F.1**
The NCRP Radiation Measurement Program. *H. L. Beck; US Department of Energy, New York, NY*

2:45 PM **TPM-F.2**
Recent Activities of the ICRU and NCRP. *P. M. DeLuca, Jr.; University of Wisconsin*

3:15 PM **TPM-F.3**
Input Needed on Biodosimetry from the Radiation Protection Community. *T. Straume; University of Utah*

3:45 PM **Break**

4:15 PM **TPM-F.4**
Radon: Update on Dose and Risk. *N. H. Harley; New York University School of Medicine*

4:45 PM **TPM-F.5**
The Implications of ICRP Publication 60 for External Radiation Dosimetry - A Retrospective Critique. *R. H. Thomas; Lawrence Livermore National Laboratory*

Wednesday

7:15-8:15 am Room: River

CEL-5 Organization of a Laser Safety Program. *K. L. Classic; Mayo Foundation*

7:15-8:15 am Room: Mission

CEL-6 Adding Value to Your Radiation Protection Program. *Robert Emery; University of Texas-Houston Health Science Center*

8:30 am-Noon Room: Lila Cockrell Theatre

WAM-A: Plenary Session: G. William Morgan Lectures

Chair:
Frank Massé

8:30 AM Introduction

8:45 AM **WAM-A.1**
Informing the Public about Radiation: The Messenger and the Message. *John Lakey; Consultant, United Kingdom*

9:30 AM **Break**

10:00 AM **WAM-A.2**
Communicating with Those Who Choose Not to Believe. *Ernest G. Létourneau; Radiation Protection Bureau Health Canada, Ontario*

10:45 AM **WAM-A.3**
Radiation Protection Information and Public Agencies: Can You Risk Their Trust or Trust Their Risks? *Paul L. Ziemer; Purdue University*

12:15-2:15 pm PEP Program

2:30-4:15 pm Room: River

WPM-A: RSO Section Session

Chair:
Ray Johnson

2:30 PM **WPM-A.1**
The Origin, Goals, and Future of the Radiation Safety Officer Section. *R. H. Johnson, Jr.; CSI-Radiation Safety Training*

2:45 PM **WPM-A.2**
Reengineering Safety. *R. J. Vetter, K. L. Classic; Mayo Clinic*

3:00 PM **WPM-A.3**
Benchmarking Radiation Protection Programs. *J. Shapiro, J. Ring; Harvard University*

3:15 PM **Break**

3:45 PM **WPM-A.4**
Radioactive Materials Inventory and Accountability at the National Institutes of Health. *S. M. Austin, R. A. Zoon; National Institutes of Health*

4:00 PM **WPM-A.5**
A Methodology for Classifying Spills. *G. Sturchio, G. Decker, M. Dorman; Merck Research Laboratories*

4:15-5:30 PM RSO Section Discussion and Business Meeting

2:30-4:45 pm Room: Fiesta A/B

WPM-B: Environmental I

Co-Chairs:
Steve O'Berg and Tom Essig

2:30 PM **WPM-B.1**
Status of the Maralinga Rehabilitation Project. *B. W. Church, P. J. Davoren; BWC Enterprises, Inc. and Department of Primary Industries and Energy, Australia*

Wednesday

2:45 PM **WPM-B.2**
Memories of an Early Nuclear Accident, 15 October 1958 Vinca, Yugoslavia. *B. J. Kovach, J. A. Auxier, F. W. Sanders; Nucon International, Auxier & Associates, Inc. and JPL*

3:00 PM **WPM-B.3**
Background Radiation Measurements in the Lower Atmosphere Before and After Chernobyl. *C. Papastefanou; Aristotle University of Thessaloniki, Greece*

3:15 PM **WPM-B.4**
Radionuclide Transport in Natural and Semi-Natural Ecosystems: Model-Directed Approach for Parameter Quantification. *I. Linkov, W. R. Schell; Harvard University and Carnegie Mellon University*

3:30 PM **Break**

4:00 PM **WPM-B.5**
Radionuclide Concentrations, Trends, and Dose Comparisons in Soils Collected from Within and Around Los Alamos National Laboratory: 1974-1996. *P. R. Fresquez, D. R. Armstrong, M. A. Mullen; Los Alamos National Laboratory*

4:15 PM **WPM-B.6**
An Estimate by Two Methods of Thyroid Absorbed Doses Due to BRAVO Fallout in Several Northern Marshall Islands. *S. V. Musolino, N. A. Greenhouse, A. P. Hull; Brookhaven National Laboratory and Oakland, CA*

4:30 PM **WPM-B.7**
An Application of the NCRP Atmospheric Screening Models to an Annual Release of Radon. *C. W. Miller; Centers for Disease Control and Prevention*

4:45-5:30 pm Environmental Section Meeting

2:30-4:45 pm Room: Fiesta D

WPM-C: Waste Management/ Decommissioning

Co-Chairs:
John Kinneman and Thomas Huston

2:30 PM **WPM-C.1**
The Fort St. Vrain Final Radiation Survey. *F. J. Borst; Public Service Company of Colorado*

2:45 PM **WPM-C.2**
Reconcentration of Radioactive Material at a Very Small Sanitary Sewerage System. *J. D. Kinneman, E. Ullrich; US Nuclear Regulatory Commission, King of Prussia, PA*

3:00 PM **WPM-C.3**
Detection Limits in Active-Neutron Devices for the Assay of Fissile Material. *J. A. Chapman, D. C. Hensley, P. C. Womble, L. F. Miller; Oak Ridge National Laboratory*

3:15 PM **Break**

3:45 PM **WPM-C.4**
Establishing ALARA Levels for Residual Radioactivity in Soil. *G. C. Chapman, T. E. Huston, J. W. Nagy, R. A. Moore; Nuclear Fuel Services*

4:00 PM **WPM-C.5**
Developement of DOE Handbook for Reuse or Recycling of Radioactive Properties. *S. Y. Chen, N. Ranek, S. Kamboj, J. Hensley, D. Burns, R. Flemming, S. Warren, A. Wallo; Argonne National Laboratory, Trinity Environmental Services and US Department of Energy, Washington, DC*

4:15 PM **WPM-C.6**
Preliminary Risk Assessment for Recycling NORM Contaminated Concrete and Steel. *W. H. Johnson, J. V. Marsicek, M. J. Rudin; University of Nevada, Las Vegas and Stan A. Huber Consultants, Inc.*

Wednesday

4:30 PM **WPM-C.7**
NORM Waste Characterization - Update of a US EPA Study. *W. Russo, J-C. Dehmel; US Environmental Protection Agency, Washington, D.C. and S. Cohen and Associates, Inc.*

2:30-5 pm *Room: Fiesta E*

WPM-D: Radon Section Session

Co-Chairs:
Naomi Harley and Carl Gogolak

2:30 PM **WPM-D.1**
Long Term Measurement of Indoor and Outdoor ^{212}Pb and Aerosol Size. *N. H. Harley, P. Chittaporn; New York University School of Medicine*

2:45 PM **WPM-D.2**
Long Term Measurement of Indoor Outdoor ^{222}Rn, Decay Products, and Aeorsol Size. *P. Chittaporn, N. H. Harley; New York University School of Medicine*

3:00 PM **WPM-D.3**
Statistical Analysis of Indoor Radon in Florida's Non-Residential Buildings. *K. K. Al-Ahmady, N. M. Gilley; Florida Department of Health*

3:15 PM **WPM-D.4**
A Proposal for a National Radon Safety Board. *R. H. Johnson, Jr; CSI-Radiation Safety Training*

3:30 PM **Break**

4:00 PM **WPM-D.5**
Assessment of RN-222 Emissions from WSSRAP Raffinate Pit 1 Dredging Operations - A Model Validation Study. *E. K. Algutifan, J. B. Baird; Jacobs Engineering Group Inc., St. Charles, MO and Denver, CO*

4:15 PM **WPM-D.6**
The Radon Risk Coefficient. *A. Cavallo, A. Hutter, P. Shebell; US Department of Energy, New York, NY*

4:30 PM **WPM-D.7**
Results of EML'S 5th Intercomparison of Active, Passive and Continuous ^{222}Rn and Progeny Measuring Instruments. *S. C. Scarpitta, K. Tu, I. Fisenne, A. Cavallo, P. Perry; US Department of Energy, New York, NY*

4:45 PM **WPM-D.8**
Evaluation of Modifiable Sub-Slab Soil Depressurization System Flow and Pressure Characteristics Designed for Floating Slab-on-Grade Large Buildings Prior to Construction. *K. K. Al-Ahmedy, D. E. Hintenlang; Florida Department of Health and University of Florida*

5-6:00 PM Radon Section Business Meeting

2:30-5 pm *Room: Mission*

WPM-E: Special Session: The Role of Dose Response Models in Radiation Risk Management

Co-Chairs:
Dan Strom and Otto Raabe

2:30 PM **WPM-E.1**
Application of Three-Dimensional Risk Models for Protracted Exposure to Ionizing Radiation. *O. G. Raabe, University of California, Davis*

2:45 PM **WPM-E.2**
Low-Dose Risk Modeling Based on Atomic Bomb Survivors. *J. L. Alvarez and F. A. Seiler, Auxier & Associates and Institute for Regulatory Science*

3:00 PM **WPM-E.3**
Integrating Basic Research into Cancer Risk Models. *A. L. Brooks, Washington State University Tri-Cities*

3:15 PM **Break**

Wednesday

3:45 PM **WPM-E.4**
Arguments For and Against the Linear Non-Threshold Model in Radiation Protection. *D. J. Strom, Pacific Northwest National Laboratory*

Panel Discussion

2:30-5 pm *Conference Rm 8 Marriott Rivercenter*

Science Teacher Workshop Training Session

Chair:
Ellie Katsikis

The following speaker/chapters will be presenting:
David Hintenlang; Florida Chapter
Anna Teachout; South Texas Chapter
Charles Willis; Baltimore/Washington Chapter
Carmine Plott; North Carolina Chapter
Jeffrey Mason; Hoosier Chapter

5:30-6:30 pm *Room: River*

HPS Annual Business Meeting

6-8 pm *Marriott Rivercenter Room: Salon D*

WPM-F: Aerosol Measurements

Chair:
Morgan Cox

WPM-F.1 An Improved Method to Prepare Stable Suspensions of Montmorillonite Clay for Use in Aerosol Science Studies. *G. J. Newton, M. D. Hoover, F. Sisneros; Lovlace Respiratory Research Institute*

WPM-F.2 Methods for Optimized Placement of Continuous Air Monitors. *J. J. Whicker, J. C. Rodgers, Y. Yang, H. Jiang, R. Lopez; Los Alamos National Laboratory and Clark University*

WPM-F.3 Revision to ANSI N13.1 Guide to Monitoring Releases of Radioactive Substances from Stacks and Ducts of Nuclear Facilities. *J. A. Glissmeyer; Pacific Northwest National Laboratory*

WPM-F.4 An Evaluation of the Alpha CAM's at the WIPP vs Current Performance Testing Standards. *M. Cox, S.Clayton, B. Estabrooks, M. Johnson; Westinghouse-Waste Isolation Division and Battelle Northwest*

WPM-F.5 Use of Naturally Occurring, Ambient Radon Progeny for In-Place Testing of High Efficiency Particulate Air Filters. *G. J. Newton, M. D. Hoover, H-C. Yeh, D. Yazee, J. Velarde; Lovelace Respiratory Research Institute*

WPM-F.6 Sampling and Analysis of Natural ^{210}Po From Industrial Processes. *J. L. Alvarez, J. E. Rice, F. A. Seiler; Auxier & Associates, FMC Corporation and Institute for Regulatory Science*

WPM-F.7 Inlet Efficiency and Particle Distribution Studies on Alpha Continuous Air Monitors in the Lovelace Aerosol Wind Tunnel. *M. D. Hoover, G. Newton, C. Ortiz, N. K. Anand, A. R.. McFarland; Lovelace Respiratory Research Institute and Texas A&M University*

Thursday

7:15-8:15 am Room: River

CEL-7 Licensee/NRC Dialogue: A Workshop Approach to Communication. *John Kinnemann; U.S. Nuclear Regulatory Commission*

7:15-8:15 am Room: Mission

CEL-8 Current Status of Health Physics Academic Programs in the U.S. and Abroad. *Wesley E. Bolch; University of Florida*

8:30 -11 am Room: Fiesta AB

THAM-A: Environmental II

Co-Chairs:

Tom Widner and Ernest Antonio

8:30 AM THAM-A.1
A Long Journey: Preparing a Superfund Site for Remediation. *A. Fellman; Malcolm Pirnie, Inc.*

8:45 AM THAM-A.2
A Study of Tritium Activity in Surface Water Near an Operating Power Reactor. *B. D. Dusenbury, Jr., S. W. Fong, J. E. Watson, Jr.; NC Division of Radiation Protection and University of North Carolina at Chapel Hill*

9:00 AM THAM-A.3
Cleanup Levels for PU-239, AM-241, U-234, U-235 & U-238 in Soils at the Rocky Flats Environmental Technology Site. *R. Roberts, B. Colby, L. Brooks, S. Slaten; Kaiser-Hill Company and US Department of Energy, Golden, CO*

9:15 AM THAM-A.4
Measurement of the Environmental Radiation Levels from the Reconcentration of Radioactive Material at a Very Small Sanitary Sewerage Treatment Plant. *J. D. Kinneman, E. Ullrich; US Nuclear Regulatory Commission, King of Prussia, PA*

9:30 AM Break

10:00 AM THAM-A.5
Dose Assessment for Radiologically Contaminated Concrete Water Tunnels at the Hanford Site. *S. Kamboj, C. Yu, E. Faillace, R. Brich, D. Mackenzie; Argonne National Laboratory and US Department of Energy*

10:15 AM THAM-A.6
Sorption and Transport of Radionuclides by Tumbleweeds from Two Plastic-Lined Evaporation Ponds. *R. W. Warren; Environmental Science and Research Foundation, Inc.*

10:30 AM THAM-A.7
Europium-152 as an Environmental Contaminatant. *T. L. Baccus, D. P. Wells, R. E. Jaquish, T. F. Gesell; Idaho State University, State of Idaho Oversight Program and Washington State Department of Health*

10:45 AM THAM-A.8
In-Situ Assessment of Gamma-Emitting Radionuclides at the Test Area North (TAN) Technical Support Facility (TSF) Using NaI(Tl) and HPGe Detectors Down-Hole. *J. R. Giles, T. R. Wood, S. L. Barrie, B. D. Higgs; Lockheed Martin Idaho Technologies Company and Parsons Engineering Science, Inc.*

8:30-11:45 am Room: River

THAM-B: Dosimetry (External and Internal)

Co-Chairs:

Ian Hamilton and Mike Charlton

8:30 AM THAM-B.1
Retrospective Assessment of Recorded Dose. *J. J. Fix; Pacific Northwest National Laboratory*

Thursday

8:45 AM **THAM-B.2**
Design of a High-Level Dosimeter for Mixed Beta, Gamma and Moderated Neutron Fields using LiF: Mn, Ti TL Materials. *R. Michel, J. C. McDonald, R. A. Gregg; Iowa State University and Pacific Northwest National Laboratory*

9:00 AM **THAM-B.3**
Absorbed Dose in the Skin from Beta Surface Contamination at Biological Laboratory Environments. *R. Michel, S. J. Degenkolb; Iowa State University and Scripps Clinic and Research Foundation*

9:15 AM **THAM-B.4**
Testing the Angular Response of Electronic Personnel Dosimeters. *R. K. Piper, R. I. Scherpelz; Battelle, Pacific Northwest National Laboratory*

9:30 AM **THAM-B.5**
Neutron Spectral Characteristics of the Georgia Tech Research Reactor Bio-Medical Facility. *J. E. Sweezy, N. E. Hertel; Georgia Institute of Technology*

9:45 AM **THAM-B.6**
Neutron Spectrum Characteristics of Critical Assemblies. *W. H. Casson; Los Alamos National Laboratory*

10:00 AM **Break**

10:30 AM **THAM-B.7**
Determination of the Effects of Backscatter on Photon Personnel Dosimeters. *R. J. Traub, J. C. McDonald, R. K. Piper; Pacific Northwest National Laboratory*

10:45 AM **THAM-B.8**
Human Nasal Airways in Respiratory Tract Dosimetry: Recent Research Results. *R. A. Guilmette, Y. S. Cheng; Lovelace Respiratory Research Institute*

11:00 AM **THAM-B.9**
Whole-Body Counter Calibration Using Short-Lived Radioisotopes: Experimental and Computer Simulation. *M. Ocasio, P. J. Papin, D. P. Hickman; Veterans Affairs Medical Center, San Diego State University and Lawrence Livermore National Laboratory*

11:15 AM **THAM-B.10**
The Development of a Job Exposure Matrix Using Uranium Alpha Count Data in Epidemiology. *J. J. Cardarelli II, R. A. Rinsky, R. Hornung, S. H. Ahrenholz, D. Reeder, P. Dill; National Institute for Occupational Safety and Health and Computer Science Corporation*

11:30 AM **THAM-B.11**
Assignment of Pure Strontium Titanate to Absorption Type Using Experimental Data. *J. Anderson, B. Kahn, R. Rosson, T. LaBone; Georgia Institute of Technology, and Westinghouse Savannah River Company*

8:30-11 am *Room: Fiesta D*

THAM-C: Accelerator

Co-Chairs:
John Laferriere and Glen Sturchio

8:30 AM **THAM-C.1**
Measurements of Accelerator-Produced Neutron and Photon Transmission Through Concrete. *K. R. Kase, J. H. Kleck, W. R. Nelson, A. Fasso, J. C. Liu, X. Mao, T. H. Jenkins.; Stanford Linear Accelerator Center and Varian Associates*

Thursday

8:45 AM **THAM-C.2**
Target Scattering of High-Energy Electron Beams and Its Effect on the Shielding of Secondary Radiation. *T. M. Jenkins, W. R. Nelson, J. C. Liu, X. S. Mao; Stanford Linear Accelerator Center*

9:00 AM **THAM-C.3**
Pure Gamma Emitter Contamination Incident at LANSCE (LAMPF). *V. R. Harris, L. S. Walker, R. L. Mundis, R. D. Werbeck, J. Herrera, J. Roberts; Los Alamos National Laboratory (Presented by M. Bayless)*

9:15 AM **THAM-C.4**
Passive Stack Monitoring Using Li-7 TLDs. *M. Fanning, R. Stokes, S. Padilla, M. Paciotti, S. Walker; Los Alamos National Laboratory*

9:30 AM **Break**

10:00 AM **THAM-C.5**
High Energy Spectral Measurements. *M. Duran, L. S. Walker, W. Casson; Los Alamos National Laboratory*

10:15 AM **THAM-C.6**
Modification and Calibration of a Bismuth Fission Chamber Used for High Energy Neutron Measurements. *L. S. Walker, M. A. Duran, V. R. Harris, P. Staples, K. Morely; Los Alamos National Laboratory*

10:30 AM **THAM-C.7**
Automating Radiation Work Permits, Daily Worker Dosimetry, and Radiation Surveys for the Los Alamos Accelerator Neutron Science Center. *J. Wenzel, M. Bayless, J. Carter, B. Weber, T. O'Dou, W. Cunningham, E. Becket; Los Alamos National Laboratory and Gutierrez-Palmenberg, Inc.*

10:45 AM **THAM-C.8**
Radiation Work Control at Los Alamos Accelerators. *T. O'Dou, M. Bayless, J. Wenzel; Gutierrez-Palmenberg, Inc. and Los Alamos National Laboratory*

11 AM-NOON Accelerator Section Business Meeting

8:30 am-Noon *Room: Mission*

THAM-D: Special Session: Radiological Protection in Latin America

Co-Chairs:
Jose Lopez and Carmine Plott

8:30 AM **THAM-D.1**
The Regulation of the Use of Radioactive Materials in Mexico. *J. R. Ortiz-Magaña; Comisión Nacional de Seguridad Nuclear Y, Salvaguardias, Mexico*

9:00 AM **THAM-D.2**
Industrial Gamma Irradiators in Latin America. *P. Zuñiga-Bello, CONACYT, Mexico; formerly with the IAEA*

9:30 AM **Break**

10:00 AM **THAM-D.3**
Radiological Protection in the Nuclear Reactors at "Laguna Verde" in Mexico *Speaker TBA*

10:30 AM **THAM-D.4**
Distribution of Radioactive Materials for Nuclear Medicine Use in Brazil. *A. Sahyun, G. M. A. A. Sordi, D. L. Rodrigues, M. P. Sanches; Instituto de Pesquisas Energeticas e Nucleares, Brazil*

11:00 AM **THAM-D.5**
Two Radiological Incidents in Latin America. *R. Hurtado-Monroy; Hospital Angeles del Pedregal, Mexico*

Additional Speakers to be Announced

Thursday

12:30-2:30 — *Salons A-F, Marriott Rivercenter*

HPS Awards Luncheon

Salad Southwest
Breast of Chicken a la Forestiere
Potato Dauphinoise
Summer Squash and Zucchini
Asparagus au Beurre
Texas Pecan Torte

If you have any dietary restrictions, please notify someone at the HPS registration desk.

3-5 pm — *PEP Program*

Notes

Professional Development Program

Sunday, June 29, 1997 through Thursday, July 3, 1997

The Professional Enrichment Program (PEP) provides a continuing education opportunity for those attending the Health Physics Society Annual Meeting. The topics for the PEP are specifically chosen to cover a broad range of subjects. Some of the sessions are popular repeats from last year and the rest are completely new lectures in response to your suggestions. 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. The class size is limited to allow for interaction between the lecturer and the students.

The speakers, course titles, and the times for each presentation are listed on the following pages. On Sunday, June 29, the day before the Annual Meeting, a series of 30 courses will be offered. The Sunday sessions begin early to allow for 3 sections that day. The program begins at 8:00 am and finishes at 4:00 pm. The Welcome Reception begins at 6:00 pm.

In addition to the above-mentioned sessions for Sunday, six PEP lectures are scheduled on Monday, Tuesday, Wednesday and Thursday afternoons. Routine PEP attendees should note that the times of the mid-week sessions are 12:15 - 2:15 p.m. again this year, to be consistent with the revised scheduling of the Annual Meeting. There will be six Thursday afternoon PEP sessions from 3:00-5:00 pm.

Registration for each two-hour course is $40 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.

In order to further the Society's commitment to the next generation of Health Physicists, 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.

Continuing Education Credits from the American Academy of Health Physics have been granted for the PEP. The PEP lecture registration fees should be included with registration fees for the Annual Meeting. The PEP registration is included on the Annual Meeting Pre-registration form. **Note that due to space limitations, purchase orders are not accepted for these courses. You are not considered registered for a course unless payment is included with your form.**

Please Note!!

Please remember to 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 waiting list at that time. Spaces left after the waiting 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. We understand that there are circumstances that will prevent you from being on time, but we do not want to turn people away and have empty seats due to no-shows.

Note: Each course is two (2) hours in length and will earn four (4) continuing education credits.

New Refund Policy

Requests for PEP refunds will be honored if received in writing by June 20. All refunds will be issued AFTER the meeting. Exceptions will be handled on a case by case basis.

1-A

Basic Legal Concepts and Legal Issues and Developments in Radiation Litigation. *David Wiedis; Jose & Wiedis*

The course begins with a discussion of basic legal concepts which are fundamental to understanding radiation litigation. Among the topics covered are the Price Anderson Amendments Act, historic development of radiation injury cases, how lawyers investigate a radiation case, how the case proceeds from the incident through the discovery process, preparation for trial, and Plaintiffs' and Defendants' strategies used during trial. Major issues currently being litigated in this field include: what is the standard of care required of a utility, the role of the federal dose standards, the role of ALARA, radiation protection and the fetus, the role of dosimetry, the impact of new Part 20 on radiation litigation, what constitutes compensable injury, what is adequate proof of causation, the role of the NIH probability of causation and the role of linear nonthreshold hypothesis. Practical examples from cases will include strategy developed for depositions and trial. **This is the first of a 3 part course (see PEPs 2-A and 3-A). Attending all 3 parts is not required, but is recommended in order to get the full impact of the course.**

1-B

Direct Measurements of Surface Activity Using the MARSSIM Guidance. *Eric W. Abelquist; Oak Ridge Institute for Science and Education*

This course will provide a comprehensive overview and discussion of the guidance contained in the Multiagency Radiation Survey and Site Investigation Manual (MARSSIM), which is derived from ISO-7503 and NUREG-1507 documents, and pertains to assessment of surface activity levels during decommissioning. Special emphasis will be placed on the selection and proper use of portable survey instruments for making direct measurements of surface activity. Topics will include calibration source selection, and how alpha and beta radiation energy, backscatter effects, source geometry, self-absorption, etc. affect detection efficiency under field conditions.

The ISO approach allows the surveyor greater ability to consider the actual characteristics of the surface contamination, and therefore, to more accurately assess the level of surface activity. The determination of instrument efficiency (ε_i) using the proposed approach is very similar to the current practice, with the exception being that the detector response, in cpm, is divided by the 2π surface emission rate of the calibration source. This value of ε_i is then multiplied by the appropriate surface efficiency, ε_s, to determine the appropriate 4π efficiency for a particular surface and condition. Therefore, the significant difference between the current practice and proposed technique of surface activity assessments is in the determination of the surface efficiency, ε_s. An example of how this proposed surface activity assessment technique can be used will be provided. Finally, the minimum detectable concentration (MDC) for surface activity assessments will be considered.

1-C

MQSA Procedures and Impact on Mammography Practice. *Theodore Villafana; Allegheny University of the Health Sciences*

The performance of mammographic procedures has been formalized into federal law. The MQSA has set requirements as to physicians interpreting mammograms, radiologic technicians performing examinations, and physicists evaluating the manmmographic equipment. These requirements, as well as a comprehensive description of mammographic equipment and tests that need to be performed, will be reviewed. Personnel exposure experience and radiation exposure patterns around mammographic equipment will be discussed. NCRP patient dose formalism and personnel dose factors will be discussed as well as the rationale and impact of MQSA tests on them.

1-D

Preparation for Part I of the ABHP Certification Examination. *Clayton French; University of Massachusetts Lowell*

This course is intended for individuals who are planning to take Part I of the ABHP certification examination. A brief review of techniques/methods for preparing for the examination and strategies for taking the examination will be given. Most of the session will be devoted to discussions of questions similar to those on the ABHP examination and to consideration and discussion

of specific questions from course participants. A handout will include practice questions similar to those on the ABHP examination.

1-E

Fundamentals of Non-Ionizing Radiation. *John A. Leonowich; Armstrong Laboratory, Brooks Air Force Base*

It is clear that the use of non-ionizing radiation (NIR) continues to cause concern to both workers and the general public. Many misconceptions have clouded the appreciation of the actual hazards associated with this physical agent and how they should be controlled. This course will review the fundamentals of NIR protection and will provide the basis for the health physicist to pursue further study in this area. All NIR radiation and fields with energies less than 12.4 eV will be covered, including: static and extremely low frequency (ELF) electromagnetic fields (0 - 3 kHz), radio frequency and microwaves (3 kHz - 300 GHz), lasers, optical and ultraviolet sources (1mm to 100 nm). The emphasis will be on identifying sources in the working environment, biological effects, and methods for mitigation and control. Detailed outlines of each area discussed will be provided to each participant. No prior knowledge of the field is required.

1-F

Classification and Disposal of Radioactive Wastes - History and Legal and Regulatory Requirements. *David C. Kocher Oak Ridge National Laboratory*

Under current law, several classes of radioactive waste arising from operations of the nuclear fuel cycle are defined. These waste classes include spent fuel when it is declared to be waste, high-level waste, transuranic waste, low-level waste, and uranium and thorium mill tailings. The primary purpose of this course is to review (1) the historical development of the definitions of the different classes of radioactive waste and their current definitions in law and (2) the legal and regulatory requirements for disposal of the different classes of radioactive waste. Requirements for management and disposal of naturally occurring or accelerator-produced radioactive material (NARM) not arising from operations of the nuclear fuel cycle also are considered. The current classification system for radioactive waste is based primarily on the source of the waste, rather than its radiological properties, and it is largely qualitative and, thus, somewhat ambiguous. Furthermore, even though permanent disposal is the desired endpoint of radioactive waste management, the waste classification system does not associate waste classes with requirements for particular disposal systems. Thus, wastes in different classes can have similar properties and require similar precautions for safe management and disposal. Alternative waste classification systems based on risks from disposal are considered.

1-G

Uses and Abuses of Models in Radiation Risk Management. *Daniel J. Strom; Pacific Northwest National Laboratory*

"All models are wrong, and some are useful" (George E.P. Box, 1979). A variety of scientific models are used to relate biological insult (such as exposure to microbes, chemicals, and energy fields) to various health endpoints. Such models (as distinct from theories and hypotheses) play an important role in the risk assessments that are used in risk management. This course provides an overview of the kinds of health effects that can be quantified and modeled, and then describes models commonly used in relating effects of ionizing radiation to various measurable or "model-able" quantities. Because there are no human data to use as input to models in many important cases, the bases for extrapolation are discussed. The "weight of evidence" for various molecular, cellular, tissue, and organism studies must be determined. In this context recent publications on the Japanese survivors of nuclear bombings, eleven cohorts of underground miners, and meta-analyses of indoor-radon case-control studies are presented, along with a review of BEIR VI. Stephen L. Brown defines three distinct uses of risk assessment models as prevention (or protection), prediction and priority-setting. The best choice of model depends on its intended use and also on non-scientific considerations in risk management. Appropriate and inappropriate uses of the linear no-threshold model are illustrated.

1-H

Health Effects: Biological Response and Practical Implications. *C.L. Greenstock; AECL, Chalk River Laboratories*

Exposure to ionizing radiation can result in a variety of biological effects including cancer and

cell death. These effects are dependent upon the nature of the radiation and the overall biological response, particularly DNA repair and antioxidant defense processes. The results of acute versus chronic exposure, and the effects of dose, dose-rate and radiation type will be described. Data from such experiments provide the foundation for new regulations and dose limits, including ICRP 60.

The PEP will give an historical perspective, and will provide the audience with basic principles and concepts. The talk will cover the interaction of radiation with biological targets, mechanistic insight into the radiation damage, and details of those factors that influence the biological consequences. These include the radiobiological oxygen effect, DNA damage repair, the oxidative stress response, adaptation and immuno-modulation, gene induction and the role of antioxidant defense enzymes.

In bio-monitoring of unplanned events or emergencies, it is important to be able to distinguish between radiation dose and biological risk. Also, there is an on-going debate over a linear versus threshold response at low doses. The importance of biological response modifiers and other environmental and genetic determinants of individual radiosensitivity in the fields of radiation protection, regulatory limits and epidemiological risk estimation, will be discussed.

1-I

Not Only Unraveling the Thorium Mystery, But Doing Something About It (or How to Keep Thorium From Becoming a Thorn in your Side). *Carol D. Berger; Integrated Environmental Management, Inc.*

Something happened in 1976, but it didn't hit home until 1991. The dosimetric and regulatory importance of thorium (^{232}Th and its radioactive progeny) for source material licensees skyrocketed. The reasons for this heightened concern about a radionuclide with a half-life of 10^6 years is somewhat mysterious and highly entertaining ... unless you were the RSO at one of the facilities that was impacted. This course will tell the story about what happened and why; the impact the issue has had on monitoring programs, dosimetry programs, personnel training, decommissioning, waste management, and litigation; and what can be done to ensure programmatic changes designed to address the issue are implementable and realistic. Included in the discussion will be items to consider in regard to air monitoring, nuclear counting, bioassay, and dose assessment at thorium facilities. Also, methods for proposing adjustments in secondary dose limits (i.e., the ALI and the DAC) to reflect the physical character of the thorium compounds in use at your facility, and some handy-dandy tools for making that task just a little bit easier, will also be presented.

1-J

Air Sampling in a Radioactive Environment. *Herman Cember; Purdue & Northwestern Universities* - **CANCELLED**

Sunday, 6/29, 10:30 am-12:30 pm

2-A

The Role of the HP in Radiation Litigation and the Problem of "Junk Science." *David Wiedis; Jose & Wiedis*

The numerous roles of the HP in radiation litigation will be discussed in depth. These include the HP liaison, consultant, fact/expert witness, etc. Honest vs. Unethical experts - what should be done? The problem of "junk science," the Supreme Court's recent Daubert decision, and a case study using the latest decisions on expert testimony will be examined. This session includes role playing by members of the audience, and excerpts from cross examination of expert witnesses. **This is the second part of a 3 part course (see PEPs 1-A and 3-A). Attending all 3 parts is not required, but is recommended in order to get the full impact of the course.**

2-B

Environmental Remediation. *Mark L. Miller; Roy F. Weston, Inc.*

This course will introduce the basic components of successful remediation programs at radioactive and hazardous waste sites. Topics will cover regulatory compliance, site characterization, removal techniques, waste management, decontamination and release of materials for unrestricted use, health and safety, and quality assurance/quality control programs. Several case studpies will be presented and discussions will focus on problems routinely encountered in the field and how these might be mitigated.

2-C

New MIRD Techniques for Medical Internal Dosimetry. *Wesley Bolch & Lionel Bouchet; University of Florida*

The following course is offered to those individuals with specific interest in medical internal dosimetry. The latest advances in medical dosimetry developed through the Medical Internal Radiation Dosimetry (MIRD) Committee of the Society of Nuclear Medicine are presented in a form available for direct use in clinical applications. Following a brief review of the MIRD schema, four specific areas of interest to the nuclear medicine dosimetrist are given. The first topic will cover the MIRD Committee's newly adopted dosimetric model of the head and brain. This model allows for consideration of SPECT/PET localization within specific brain subregions such as the cauduate and lentiform nuclei. The second topic will introduce methods of explicitly considering electron transport in internal dose calculations, not formerly considered under the MIRD or ICRP methodologies. Examples will be shown for its influence on current dose estimates to various organs as a function of age. The third topic will cover beta particle dosimetry of both trabecular and cortical bone. Techniques are shown for estimating both site specific and skeletal average doses based on the updates to the skeleton of Reference Man given in ICRP Publication 70. The fourth and final topic will present new techniques for rapidly assessing isodose contours and dose volume histograms in both normal and tumor-bearing organs imaged through quantitative SPECT or PET.

2-D

Part II ABHP Certification Preparation Course. *Kenneth Skrable; University of Massachusetts Lowell*

This PEP provides general as well as some specific guidance to candidates planning to take Part II of the ABHP certification exam as well as guidance to CHPs, members of the ABHP and members of the AAHP involved with either the preparation or review of exam questions. Copies of the 1996 ABHP Part II exam and solutions, selected questions and solutions from other previous exams, and a Part II Examination Preparation Guide comprise the PEP handout. In addition to providing general guidance in preparation for the Part II exam, some specific questions with obscure or incorrect information will be reviewed with the intent of providing guidance on how to answer such questions. A recommended peer review process will be presented to identify the obscurities and incorrect information in such questions so that they can be corrected prior to printing of any future Part II exam. Current and planned programs of the ABHP to improve the peer review of questions and the quality of future exams will be presented.

2-E

Overview of Current Non-Ionizing Radiation Standards. *John A. Leonowich; Armstrong Laboratory, Brooks Air Force Base*

It is recommended that participants complete the PEP *Fundamentals of Non-Ionizing Radiation* (PEP 1-E), or its equivalent. Recent years marked the release of extensive revisions to both the ANSI/IEEE Radio frequency/Microwave Standard and the ANSI Z136.1 Laser Standard. Both of these documents will be reviewed in depth, as well as the ACGIH recommendations for magnetic fields and non-coherent optical radiation. Although these standards are widely used in the United States, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) has published a series of guidelines which cover all portion of the NIR spectrum and are used throughout the world. This comprehensive series of guidelines will also be reviewed and compared to the *de facto* standards used in the United States. Finally, although there is no comprehensive federal NIR standard similar to 10 CFR 20, the special requirements of the FCC, DOD, DOE, OSHA and FDA will be discussed.

2-F

An Update of the Basic DOT/NRC Transport Regulations (A Year After the Major Amendments). *Al Grella; Grella Consulting, Inc.*

On September 28, 1995, the US DOT and NRC finalized their 8-year long rulemaking effort to effect revisions to US regulations to conform to the international standards of the IAEA as found in the 1985 edition of Safety Series No. (Revised 1990). Except for a few parts, the majority of the amendments were

effective for mandatory compliance on April 1, 1996. Although many of the amendments were editorial, several were quite substantial and these new requirements are producing impacts of varying degree on both shippers and carriers and several problems and issues have arisen during their implementation. In this course, as the basic regulations are reviewed, these major substantive revisions will be emphasized and highlighted along with the impacts as well as these issues which have emerged during the past year of implementation.

A "self-test" will be passed out to each attendee for his/her own use. This may prove be useful to a student's hazmat employer when considering whether to certify that his employee has been properly retrained per DOT training regulations which require retraining and testing of hazmat employees every three years.

The two-hour course is designed to be of benefit not only to a person who is relatively unfamiliar with DOT/NRC regulations, but also as a review and refresher to persons who are familiar with those regulations, particularly with regard to the discussion of the recent amendments and the issues which have emerged during their implementation.

2-G

Effective Strategies for Communicating Risk. *Jerrold T. Bushberg; University of California, Davis*

This presentation will focus on risk communication strategies in order to enable professionals to more effectively communicate radiation risks in public settings. The seminar will discuss the fundamentals of effective communications, common perceptions and misconceptions regarding radiation health risks, understanding the factors that engender public "outrage," and managing those issues. The first part of the seminar will begin by reviewing the fundamentals of effective communication and understanding public perceptions as described above. The second part will be interactive, utilizing a mock public hearing to practice and sharpen your communication skills. Participants will have the opportunity to work in teams during mock public hearings both as proponents and opponents of a proposed controversial project. At the conclusion of this seminar, participants should have a better understanding of effective communication strategies and the nature of public controversy and its management.

2-H

Basic Local Exhaust Ventilation for the Health Physicist. *Ron Reif; US Department of Energy*

The operational health physicist relies on engineering controls to minimize exposures to radiation and radioactive materials. Local exhaust ventilation (LEV) can be an effective engineering control method for controlling the airborne release of radioactive materials to the workplace. This course is designed to provide health physicists with practical information that is necessary to identify and design effective LEV systems. An overview of the American Conference of Governmental Industrial Hygienists (ACGIH) Industrial Ventilation Manual and other useful guidance documents, along with several case studies, will be presented.

2-I

Recent Trends in Radiation Detector Development. *Glenn F. Knoll; University of Michigan*

Recent developments in methods for the detection and spectroscopy of ionizing radiation will be reviewed, with emphasis on those that hold promise for improving measurement capabilities over the next decade. Topics will include new scintillators, photo detectors, advanced semiconductor materials and configurations, micro strip gas detectors, and other devices under active development. Applications will also be shown of novel gas-filled detectors, liquid and plastic scintillators, position-sensitive detectors, and digital pulse processing techniques.

2-J

Fundamentals of Alpha Continuous Air Monitoring, Part 1. *Mark D. Hoover and George J. Newton; Lovelace Respiratory Research Institute*

This 2-part PEP presents an overview of the history, theory, regulatory requirements, and operational aspects of alpha continuous air monitoring. Practical problems cover the use of electroplated sources, selection of appropriate filters, calculation of minimum detectable activity, and selection of appropriate alarm setpoints.

Case studies describe common operational problems and associated recommendations for good practice. **NOTE: This is a two-part course and participants are encouraged (but not required) to register for both parts. See PEP 3-J for Part 2.**

Sunday, 6/29, 2:00 - 4:00 pm

3-A

Avoiding Litigation and the Importance of Record Keeping. *David Wiedis; Jose & Wiedis*

The emphasis of this part of the course is on avoiding lawsuits in the future and increasing your chances of winning if you are sued. The course examines Plaintiffs' strategies, defense counter-strategies, the importance of record keeping, the impact of settlements, aggressive vs. passive philosophy of litigation, and the common mistakes HPs make which invite litigation. **This is the third part of a 3 part course (see PEPs 1-A and 2-A). Attending all 3 parts is not required, but is recommended in order to get the full impact of the course.**

3-B

Comprehensive Site Characterization for Decommissioning Nuclear Facilities. *Chris Martel; Yankee Atomic Electric Co.*

Nuclear facilities that are undergoing characterization for decommissioning purposes must meet not only radiological release criteria but non-radiological as well. This session will present the development of a comprehensive radiological and non-radiological site characterization program, and will focus on characterization of environmental media. Regulations from EPA, NRC and typical state agencies will be addressed. The use of guidance documents such as MARSSIM, NUREG/CR-5849 and others will be discussed. Actual examples from the Yankee Nuclear Power Station decommissioning project will be presented. This session is intended for the health physicist who requires a broader understanding of the site characterization process for nuclear facilities.

3-C

Medical Management of Radiation Accidents. *Jerrold T. Bushberg; University of California, Davis*

Medical response and management of radiological accidents begins with education of medical and ancillary health care personnel in the fundamentals of radiation exposure and its biological effects. Additional training and hands-on experience in radiation protection principles are necessary to minimize patient and personnel radiation exposure and contamination. This course will present the essential elements necessary to train medical personnel regarding priorities for medical management of these patients and how to recognize and evaluate different types of radiation injuries. Information is also presented to help educate ancillary health care workers on how to set up and use radiation monitoring and decontamination equipment and facilities. This course provides an overview of acute radiation injury and the principles which are essential to the appropriate medical management of radiation accident victims.

3-D

Demystifying Internal Dose Calculations. *Michael G. Stabin; Oak Ridge Institute for Science and Education*

Internal dose calculations have intimidated many would-be students, as the material often seems to involve hundreds of mystifying equations and symbols. In truth, internal dose calculations are not very difficult, and any system of internal dosimetry can be understood from a few basic first principles relationships. After that, the various systems (e.g., ICRP 2, MIRD, ICRP 30) are different only in the symbols used to represent certain grouped quantities. In this talk, these basic relationships will be explained, and most of the major internal dose systems that have been developed will be explained within this context. The use of the internal dose kinetic systems to interpret bioassay data will also be explained. Example calculations from several of the most-used systems will be given as well. With this material, any health physicist should be able to understand most internal dose problems that may be encountered, and the handling of more complex problems becomes simply a matter of adding details.

3-E

Biological Safety for the Health Physicist. *Robert Emery; University of Texas*

Radiation safety professionals encounter biological hazards in a variety of workplace settings, including health care institutions, biomedical research facilities, bioassay programs, waste programs, and emergency response. This course

is designed to provide health physicists with the practical information necessary to anticipate, recognize, evaluate, and control the various biological hazards present in these environments. An overview of the regulations and guidance documents associated with the discipline of biological safety is also provided, along with an extensive listing of useful references.

3-F

Disposing of DOE Mixed Low-Level Waste: Scoping-Level Analyses. *Robert Waters; Sandia National Laboratory*

The applied research that has been conducted to scope the magnitude of the mixed low-level waste (MLLW) disposal problem will be summarized. An overview of the performance evaluations (PEs), which estimated and compared the disposal capabilities of 15 DOE sites, will be provided. The methodology and results of an analysis of the effects of treatment on the waste volumes and radionuclide concentrations in waste and a comparison of radionuclide concentrations in waste with the disposal limits in the PE will be presented. The results of these analyses will be summarized along with an assessment of the magnitude of the remaining problems to be resolved.

3-G

Advances in Dose Reconstruction at Oak Ridge. *F. Owen Hoffman; SENES Oak Ridge, Inc.*

This short course will emphasize advances in the state of the art made in the Oak Ridge Dose Reconstruction Study. The Oak Ridge Dose Reconstruction has seven tasks: 1) releases of radioiodine from X-10 radiolanthanum processing, 2) atmospheric and aquatic discharges of mercury from Y-12, 3) releases of PCBs from all facilities, 4) aquatic releases of radionuclides from X-10 into the Clinch River, 5) a systematic search for classified and unclassified records of past releases, 6) releases of uranium from all facilities, and 7) screening of contaminants and release events not previously evaluated in the study. This project has been designed to permit iterative evaluation of interim results and reallocation of resources both within and among tasks. The contaminants, exposure pathways, and release events requiring the most intensive analysis are identified first through screening level calculations and then through an iterative assessment approach based on a preliminary uncertainty analysis using more realistic sets of models and assumptions. Uncertain model components are represented by subjective probability distributions, reflecting the present state of knowledge about true but unknown values. These distributions are propagated through to estimates of dose and health risk using Monte Carlo simulation. The results of the screening calculations and the preliminary uncertainty analysis are compared against established decision criteria to identify the need for resource re-allocation among tasks. At Oak Ridge, a 10^{-4} life-time incidence of cancer and a hazard index of one is being used as a decision criterion to prioritize resources. Efforts are continually focused to improve the set of preliminary assumptions that may significantly impact the overall uncertainty in the final result. Decisions about reallocation of resources are made by the Oak Ridge Health Agreement Steering Panel and the Tennessee Department of Health, which actively seek public involvement and participation.

3-H

The Linear No-Threshold Debate. *Kenneth L. Mossman; Arizona State University*

The focus of this course will be a balanced discussion of the major issues driving the linear no-threshold (LNT) debate. First, regulations aimed at reducing occupational health and safety risks have imposed costs of over $9 billion annually for negligible risk-reduction benefits. Regulations to protect the public health depend on the concept that reduction in dose leads to a concomitant reduction in health risk. The LNT model is used widely to predict the reduction in risk for a given reduction in dose. Second, support of the LNT theory, and the theory that any radiation dose is potentially harmful, has resulted in a public relations nightmare for the nuclear industries. The nuclear community's unfailing support for theory has made it almost impossible to effectively respond to alarmists' claims that any dose of radiation is dangerous. Third, based on a growing body of scientific evidence, the LNT model appears to be an oversimplification of the dose-response relationship and overestimates risk in the low dose range. The LNT model is based on three

fundamental assumptions that have now been called into question: (a) Cancer may result from a single ionizing event in a critical cell. (b) The probability of adverse health outcomes is linearly related to absorbed dose. (c) Radiation damage is not repairable.

3-I

Radioactive Sources in Recycled Metal: Solving and Preventing the Problem. *Joel O. Lubenau and James G. Yusko; Nuclear Regulatory Commission and Pennsylvania Department of Environmental Protection*

Radioactive materials mixed with metal scrap are a major problem for the metal recycling industry. Metals that have been affected include iron/steel, aluminum, copper, zinc, vanadium and gold. Radioactive sources mixed with metal scrap have resulted in radiation injuries to radiation workers and the general public. Contamination of steel mills that have inadvertently smelted radiation sources has resulted in financial losses of up to $23 million. This lecture will review the problems caused by radioactive materials entering the recycling stream, the protective measures taken by the recycling industry, regulatory and other initiatives to solve the problem, and, most importantly, steps that can be taken by health physicists.

3-J

Fundamentals of Alpha Continuous Air Monitoring, Part 2. *Mark D. Hoover and George J. Newton; Lovelace Respiratory Research Institute*

See PEP 2-J for description. **NOTE: This is the continuation of a 2-part course. Participants are encouraged (but not required) to register for both parts.**

Monday, 6/30 – 12:15 - 2:15 pm

M-1

Current Approaches to Regulating Public Exposures to Radionuclides and Hazardous Chemicals. *David C. Kocher; Oak Ridge National Laboratory*

Under current law and regulations, two different approaches are used to control exposures of the public to hazardous substances in the environment. The different approaches to risk management apply to (1) radionuclides only as regulated under the Atomic Energy Act and (2) hazardous chemicals or radionuclides as regulated under any other laws (e.g., Safe Drinking Water Act, Clean Air Act and CERCLA). This course discusses the two different approaches to risk management, the resulting inconsistencies in lifetime cancer risks that are regarded as "acceptable" or "unacceptable," and the potentially adverse impacts of the current regulatory approach for chemical carcinogens on the traditional approach to regulating radiation exposures of the public. The course then discusses how the apparent inconsistencies between the two regulatory approaches can be reconciled based on recognition of (1) the fundamental difference between the use of exposure limits for radionuclides but risk goals for hazardous chemicals, (2) the different meanings of "acceptable" and "unacceptable" risks in the two approaches, and (3) the primary importance of the ALARA principle in risk management decisions using either approach. Based on these concepts, a unified regulatory framework which is consistent with all current regulations and guidances for limiting risks to the public from routine and accidental exposures to radionuclides and hazardous chemicals is developed.

M-2

High Dose Dosimetry. *Joseph C. McDonald; Pacific Northwest National Laboratory*

A number of specialized methods are used to measure the large doses of ionizing radiation encountered in radiation therapy, industrial radiation processing and the sterilization of medical products. Some of these methods rely on physical processes that are applicable to low dose measurements, but some methods are only suitable for high dose dosimetry. One type of radiation measuring instrument that is particularly well suited to the measurement of large absorbed doses is the calorimeter. Calorimeters are nearly insensitive to the effects of the total dose and dose rate of the incident radiation. Calorimeters can be used as absolute instruments because they do not depend on the use of supplementary dosimetric quantities such as the mass stopping power, or the mean energy expended in a gas per ion pair formed, W. The National Institute of Standards and Technology (NIST) will soon announce the availability of direct absorbed dose calibrations using a calorimeter. NIST will also initiate a program of accrediting secondary calibration laboratories for high doses. Additional methods of high

dose dosimetry, including radiochromic dye films and alanine dosimeters, will be discussed. Examples of practical systems used for routine measurements will be given along with a discussion of transfer standard devices that are used to establish traceability to national standards.

M-3

Introduction to Naturally Occurring Radioactive Material. *Philip Egidi; Oak Ridge National Laboratory*

Naturally Occurring Radioactive Material (NORM) is often technologically enhanced (that is concentrated) as a result of industrial processes. This presentation will review background radioactivity and radionuclides of interest; discuss current definitions, exemptions, and control and disposal of NORM; and examine industrial processes and the types of NORM generated.

M-4

Recent Trends in Radiation Detector Development. *Glenn F. Knoll; University of Michigan*

Recent developments in methods for the detection and spectroscopy of ionizing radiation will be reviewed, with emphasis on those that hold promise for improving measurement capabilities over the next decade. Topics will include new scintillators, photo detectors, advanced semiconductor materials and configurations, micro strip gas detectors, and other devices under active development. Applications of novel gas-filled detectors, liquid and plastic scintillators, position-sensitive detectors, and digital pulse processing techniques will also be shown.

M-5

Health Physics Resources on the Internet. *Melissa Woo; University of Illinois*

This session will provide health physicists with information on the vast health physics-related resources available on the Internet. An overview of basic Internet jargon will be provided for attendees unfamiliar with the Internet. General information about the various methods for accessing information from the Internet will be discussed, such as Internet mailing lists, ftp sites and World Wide Web pages. Locating specific information on the Internet will be covered using methods such as World Wide Web search engines and WAIS searches. Much of the session will involve real-time online demonstrations of some of the many resources available to health physicists on the Internet, with an emphasis on information on the World Wide Web.

M-6

DOE Low-Level and Mixed Low-Level Waste Management: Secrecy to Openness. *Joel Case; US Department of Energy*

The course will provide an overview of DOE waste management practices. The course content will provide a historical overview of past practices and the evolution to current practices. Topics will include DEO's regulatory approach, current management practices, the role of stakeholders, issues and future strategy. Activities conducted through the Federal Facilities Compliance Act regarding mixed LLW DOE management will be emphasized in order to highlight course message points.

Tuesday, 7/1 – 12:15 - 2:15 pm

T-1

The Effects of Ionizing Radiation on the Developing Embryo: Estimating Risks and Providing Appropriate Counseling. *Robert L. Brent; Alfred I DuPont Institute*

Many physicians are unfamiliar with the quantitative and qualitative effects of ionizing radiation and consultations to health physicists indicate that exposed women have received erroneous information. In the field of ionizing radiation, health physicists have a better comprehension of the biologic effects and the quantitative maximum risks than for any other environmental hazard. Animal and human data support the conclusion that there is a threshold dose for the production of the congenital malformations, namely, that no increases in the incidence of gross congenital malformations, intrauterine growth retardation, or abortion will occur below specific exposures. Medically indicated diagnostic roentgenograms are appropriate for pregnant women, and there is no medical justification for terminating a pregnancy in women exposed to 5 rem (0.05 Sv) or less because of radiation exposure. Counseling women of reproductive age should be based on sound information about the risks of radiation exposure.

T-2

External Beta Ray Dosimetry. *Herman Cember; Purdue & Northwestern Universities*

This course will begin with a review of the physics of beta decay and the interaction of beta radiation with matter. The physics of beta radiation will then be combined with the basic principles of radiation dosimetry to calculate the external radiation dose from contaminated surfaces, skin contamination, and submersion in a cloud of a beta-emitting gaseous radionuclide.

T-3

Waste Management at Decommissioning Projects. *Wayne C. Gaul ; OHM Remediation Services Corp.*

Wastes generated during a decontamination and decommissioning (D&D) project may require treatment to meet the disposal requirements mandated by Federal and State regulations, disposal site specific requirements, and cost constraints. Selection of an appropriate treatment methodology is critical to the successful completion of the D&D project. If the wrong treatment method is employed, treatment and disposal costs may be unnecessarily high and the waste may not be acceptable for disposal. Proper selection requires knowledge of the available treatment processes, their costs, and the requirements for disposal of the wastes. Examples of decontamination techniques and their applicability will be given. Since treatment costs are so highly dependent on site and waste characteristics, the costs will be discussed on a general basis.

Because the treatment and disposal of mixed waste presents a number of unique problems compared to low-level waste, each will be discussed separately. A discussion will be given on different treatment options for mixed waste.

T-4

Performance-Based Assessment of Radiological Protection Programs. *Larry R. McKay; US Department of Energy*

The objectives of this course are to discuss methods of effectively planning, conducting, reporting and performing follow-up actions for performance-based assessments of radiological protection programs. This course is intentionally designed to be generic in nature (to apply to programs in all nuclear environments). However, to illustrate critical points, specific examples will be included form NRC licensees, DOE facilities, and industrial installations. In addition, the instructor will include personal suggestions on making this process work more smoothly, guidance derived from over 20 years of assessment experience.

To derive maximum benefit from the course, the participant should have a working knowledge of applied health physics, a general understanding of assessment methodology, and occupy a position responsible for either the management or assessment of an operational radiological protection program.

T-5

Putting Health Physics Information on the Internet. *Melissa Woo; University of Illinois*

This session is intended for health physics professionals interested in using the Internet to distribute health physics information to peers, users and/or the general public. The various methods of providing information on the Internet will be addressed. An introduction to concepts needed for those wishing to utilize the Internet to deliver information will be covered, with emphasis on World Wide Web site design philosophy. Additionally, a general overview of technical aspects and hardware/software issues will be presented. Some knowledge of computers and the Internet is desirable.

T-6

University and Medical Radioactive Waste Management. *Joseph Ring; Harvard University*

This presentation discusses the aspects of a radioactive waste management program designed for a large university and medical research complex to contain costs and to reduce the impact of waste regulations. The presentation includes discussion of decay-in-storage, incineration, packaging, mixed wastes, and training for the waste programs. Emphasis is placed on a cooperative effort with investigators to pre-plan operations as well as simple techniques to implement and contain costs. The presentation discusses how to review research applications with an eye to waste in the program, how the laboratory group packages and how the safety office manages the generated waste. To ensure oversight for cost containment and generation rates, a series of metrics, or numerical ratios, are presented which one can use to evaluate the effectiveness of a radioactive waste management program.

Wednesday, 7/2 – 12:15 - 2:15 pm

W-1

Low Level Radiation Risk Assessment and Its Uncertainty. *Charles B. Meinhold; NCRP/ Brookhaven National Laboratory*

In 1977, the ICRP introduced the idea that dose should be based on the concept of acceptable risk. Thus began our fascination with risk estimation. The dose limits, the value of avoiding dose, i.e., the $/Sv, probability of causation calculations, public perception, decisions on medical, X-ray or nuclear medicine examinations, decisions on decontamination and decommissioning, are just some of the important societal issues tied to our estimates of risk. Just how good are they? In this session an attempt will be made to characterize our knowledge of radiation risks according to the robustness of the data, i.e., from fact to fancy. We can then review this breakdown of the information and choose those items that we need to make our judgements - at least for today.

W-2

Problem Solving for Health Physicists. *Tom Johnson; Communication Sciences Institute, Inc.*

Have you ever used Dr. Herman Cember's book Introduction to Health Physics? Do some of the problems have you stumped? This class will provide you with practical techniques for estimating and solving numerical health physics problems. Students are asked to vote for 4 problems from Introduction to Health Physics which they would most like to see solved in the class. Votes must be received by Tom Johnson prior to 2 June '97. Only the 4 winning problems will be solved in their entirety, and used as examples for demonstrating problem solving techniques. To vote for your favorite 4 questions, contact Tom at: fax (301) 942-5948, PHONE (301) 942-5946, or by e-mail at tj61@juno.com.

W-3

A Field Perspective of 10 CFR 835. *Gene E. Runkle; US Department of Energy*

The DOE issued 10 CFR 835 "Occupational Radiation Protection" in December 1993 with full implementation required by January 1, 1995. On December 23, 1996, the Department published its proposed amendments to the primary standards for occupational radiation protection in the Federal Register. This rule contains the general standards for the radiation protection programs for the DOE complex. The DOE Radiological Control Manual, that contains prescriptive methods for implementing radiological control requirements such as radiological posting, contamination control and training, has changed from a mandatory Manual to a guidance document. The DOE sites have implemented 10 CFR 835, obtained an exemption per the 10 CFR 820 Subpart E process or self-reported non-compliance.

This session will cover the 10 CFR 835 requirements, the proposed revisions to the rule, and associated documents; the practical implementing processes; cost-saving methods; the exemption process; and the overall lessons learned. Other field perspectives will include the handling of the proposed revision to 10 CFR 835, noncompliance tracking and enforcement, DOE Notice 441.2 and the application of Work Smart Standards to Rad Protection.

W-4

Mitigating Radiation Dose to Patient and Staff During Extended Time Fluoroscopic X-Ray Procedures. *Theodore Villafana; Allegheny University of the Health Sciences*

A number of serious radiation-induced skin burns have been reported for patients subsequent to extended medical fluoroscopic procedures usually associated with cardiac catheterization examinations, angioplasty, or electrophysiology ablation therapies. Personnel exposures exceeding 5000 mr/year as registered on film badges worn outside protective lead aprons are now not uncommon. This PEP course will first describe commonly used fluoroscopic configurations and fluoroscopic instrumentation. Then factors affecting radiation exposure and their control for both patient and personnel will be described. Radiation monitoring strategies will be outlined for both patient and personnel.

W-5

Computer-Based Radiation Safety Training. *Carolyn J. Owen; Lawrence Livermore National Laboratory*

The traditional approach to radiation safety training has been to provide a stand-up lecture and/or video on the topic and a repeat performance periodically of the same material. New approaches to meeting training requirements are

needed to address the advent of flexible work hours, telecommuting, and the employee that would like a different approach to learning than the traditional lecture. Computer-based training will be reviewed and demonstrations of several different computer-based radiation safety training classes will be provided. The different types of software used and options for creating your own radiation safety training classes on computer shall be discussed. At the end of the course, a participant shall be well acquainted with alternative radiation safety training options on the computer and have the necessary information for implementing similar approaches at their own facilities.

W-6

Health Physics Activities in Mitigating Accidents and Unusual Events at Low-Level Waste Disposal Facilities. *Vern C. Rogers; Rogers & Associates Engineering Corporation*

Health Physicists and Radiation Protection Technicians working at low-level waste disposal facilities face a wide range of challenges. They must ensure the safety of the workers, and they must protect the public and the environment during normal operations and for accidents and non-routine events. As they perform their important duties, they also coordinate closely with operations personnel to facilitate the safe, efficient disposal of the waste packages. This course addresses an important area for site radiation protection personnel ... accidents and non-routine events. These range from handling packages with contamination on the outside surfaces, to ruptured containers with significant releases of radioactive materials, to hung-up high-activity liners. Dealing with accidents and non-routine events involves planning, preparation and the development of relevant procedures beforehand. This planning and preparation should also influence normal operating procedures to reduce the likelihood and consequences of accidents and non-routine events. The course also will cover accident scenarios and the consequences that are contained in license applications for LLW disposal facilities and will discuss the framework for mitigating the consequences of accidents.

Thursday, 7/3 – 3:00 - 5:00 pm

TH-1

Standardization of Airborne Gamma-Ray Surveys. *Bob Grasty. Exploranium G.S. Ltd.*

In 1996 it is estimated that 3 million line kilometers of airborne gamma-ray surveys will be flown by geophysical survey contractors using 20 to 40 airborne gamma ray spectrometers. The principal output from these surveys are maps showing the ground concentrations of potassium, uranium and thorium as well as air absorbed dose rates. In order to compare the data from systems with different volumes, flown at varying flight elevations, major survey contracts now specify a rigid set of calibration and data processing procedures. This course will describe the procedures for correcting the airborne data for radon and cosmic background fluctuations and for converting the measurements to ground concentrations of the natural radioactive elements and to air absorbed dose rates.

TH-2

Communicating Health Physics. *Ellen Hochheiser; Fluor Daniel Hanford, Inc.*

Health Physicists are frequently required to explain radiation safety to many different individuals, each with his or her own background. These individuals can include non-technical managers, researchers, health physicists, health physics technicians, maintenance technicians, operators, general public, physicians, etc. Each individual comes complete with his or her own knowledge, concerns and prejudices. This PEP will address general techniques for discussing radiation risks and benefits to varied groups. Much of this session will be discussions on successful techniques for handling specific situations.

TH-3

Radiation Dose to the Embryo/Fetus from Internal Emitters. *Michael G. Stabin; Oak Ridge Institute for Science and Education*

Radiation dose calculations for the embryo/fetus from internal emitters have been greatly facilitated recently through the publication of several new models and documents. In this talk, current methods for calculation of the embryo/fetal dose will be discussed, and several example calculations, including some case studies, will be presented. The talk will cover applications in nuclear

medicine as well as in the nuclear fuel cycle. The recently developed phantoms representing the adult female throughout pregnancy will be discussed, and available tools for the calculation of embryo/fetal dose (e.g., MIRDOSE 3.1, NUREG/CR-5631) will be described and demonstrated. With this material, the student should be able to handle most situations involving the calculation of radiation doses in pregnancy.

TH-4

Radiochemistry Practices and Requirements Related to Environmental Characterization and Monitoring. *Gary L. Troyer. NUMATEC Hanford Co.*

In addition to survey instruments and dose meters, radiation protection in both the workplace and environment relies on radiochemistry techniques to sort out and quantify source term nuclides of interest. These techniques may be applied to low level environmental and bioassay samples as well as high activity nuclear process materials. Traditional bioassay sample analyses are well developed due to reasonable uniformity of matrix. However, environmental samples may have a large range of chemical challenges which must be considered in the selection of an appropriate analytical method. In some situations, high radiation level samples are also encountered such as those found in site or facility characterization in preparation for decontamination and decommissioning. In addition, regulatory agencies are establishing criteria and guidance on laboratory performance and reporting protocols.

This PEP course will survey the generally accepted techniques, correlate practice with target needs, identify limitations and discuss current issues. The topics of sample chain of custody, data verification and validation, data reporting standards, and new guidance documents will be presented. The student will obtain general information on a broad range of radiochemistry methods, challenges and trends.

TH-5

Advanced Internet Topics for the Health Physicist. *Bruce Busby; University of Michigan*

The Health Physics community has an active on-line presence, with HPS, HP Journal, AAHP, NRRPT and NCRP having exceptional web sites. And of course, mailing lists and e-mail are popular. But, are you getting the most out of the net? Is there more to it than the WWW and e-mail? Can you send files by e-mail? Should you worry about Internet security or viruses? Want to know how to improve your web site? This session will answer these questions and more. Topics to be covered in this lecture include: file compression and transfer, newsgroups, security issues, viruses and hoaxes. Moreover, advanced HTML topics such as using forms, tables, graphics and programming to enhance your web site will be discussed. Much of the session will focus on how health physicists can better utilize the more advanced features of the Internet and Internet software, with many real-life examples demonstrated on-line. Basic knowledge of Internet fundamentals is highly desirable.

TH-6

Management of Low-Level Radioactive and Mixed Waste from a State Regulatory Perspective. *William Dornsife; Pennsylvania Department of Environmental Protection*

This lecture will cover various management and regulatory issues and problems regarding low-level radioactive and mixed waste from the perspective of a state regulator. This will include issues such as waste characteristics and toxicity, waste minimization planning, availability of appropriate treatment and disposal facilities, risk communication techniques; and insight into methods for addressing regulatory issues more effectively.

Continuing Education Lectures

NOTE: Courses are included in the HPS Registration fee.

Monday, 6/30, 7:15 - 8:15 am

CEL-1 Recent Developments in Radiation Litigation. *David Wiedis; Jose and Wiedis*

Abstract not available at this time.

CEL-2 How to Deal With Radiation Risk Perceptions and Resistance to Radiation Messages. *Raymond H. Johnson, Jr.; Communication Sciences Institute*

Everyone is afraid of radiation at some level or under certain circumstances. Our fears are driven by images that are automatically associ-

ated with radiation. Similar images also lead to automatic resistance when we are confronted with radiation issues. When images fuel anxieties that lead to automatic reactions, a demon has control of the risk communication. To regain control, we can learn how to identify the fears and images that control radiation risk perceptions. With these insights we can begin to deal with anger and resistance, and become effective radiation risk communicators.

Tuesday, July 1, 7:15 - 8:15 am

CEL-3 Ten Principles and Ten Commandments of Radiation Protection. *Daniel J. Strom; Pacific Northwest National Laboratory*

For decades, the phrase "time, distance, and shielding" has been presented as summarizing the "basics" of radiation protection. Indeed, for protection from external radiation sources, these three principles are probably the most important ones on which a worker can make decisions and take actions. However, these principles do not address protection against intakes of radioactive materials or "ontakes" (skin contamination), other risk-limiting measures, or other important protective measures taken by governments, public health agencies, regulators, and institutional programs (measures such as performance standards, health education, facility engineering requirements, and administrative procedures). I have identified ten principles and ten accompanying commandments of radiation protection: time, distance, dispersal, source reduction, source barrier, personal barrier, decorporation, effect mitigation, optimal technology and limitation of other exposures. Corresponding non-technical forms of the commandments are hurry (but don't be hasty); stay away from it or stay upwind; disperse it and dilute it; use as little as possible; keep it in; keep it out; get it out or off of you (after intake or skin contamination); limit the damage; choose the best technology (perhaps a non-radiation technology); and don't compound risks (don't smoke). Technical versions of the commandments are also provided using the verbs "optimize," "maximize," or "minimize." Not all commandments can be applied at the same time, and application may be different for workers and members of the public. Advantages, disadvantages, and implementation of these principles and commandments are discussed, and numerous examples provided. The application of the principles and commandments must be based on knowledge of the radiological conditions to be managed.

CEL-4 Radiation Dose From Radiopharmaceuticals Administered During Pregnancy and Breastfeeding. *Michael G. Stabin; Oak Ridge Institute for Science and Education*

The administration of radiopharmaceuticals to a pregnant or lactating woman is of special concern, due to the radiosensitivity of the embryo/fetus or the infant. The recent development of the pregnant female phantom series has greatly facilitated the calculation of the dose to the embryo/fetus. With the in-depth research performed by Russell into the types and frequencies of radiopharmaceuticals administered to women of child-bearing age and into the available data on the placental crossover of these compounds (mostly in animal studies), we now have available a fairly complete set of radiation dosimetry data for the embryo/fetus at all stages of pregnancy. There are many gaps in the knowledge base for this subject - for instance, many radiopharmaceuticals have not been evaluated at all for placental crossover. Nonetheless, this data set represents the best available information on this subject. In the case of breast-feeding, a review of the literature was also performed to study the reported information on the excretion of radiopharmaceuticals, and a kinetic model was developed which attempted to predict the lowest and highest intake of various compounds which might occur, given the observed data in the literature (this work was done in support of the recent NRC rulemaking on patient release criteria in nuclear medicine). From this study, the amount of time that breast-feeding would need to be interrupted to keep the effective dose equivalent to an infant below 1 mSv was determined for all nuclear medicine compounds for which breast milk excretion has been reported. The contribution from radioactive contaminants was considered. The compendium of the excretion concentrations and clearance half-times will be presented, along with the results of the infant dose analysis.

Wednesday, 7/2, 7:15 - 8:15 am

CEL-5 Organization of a Laser Safety Program. *K.L. Classic; Mayo Foundation*

An organization that uses potentially hazardous laser systems is responsible to provide a safe work environment for personnel. This includes a program to evaluate and minimize potential occupational hazards. A successful laser safety program must be designed to reduce employee risk, minimize liability, and meet organizational objectives. The structure of a laser safety program will depend on the number of laser systems and locations, level of hazard, number of employees exposed, and the organizational commitment to the safety program. Responsibility for the program may be delegated to a safety department (environmental, industrial hygiene, radiation) or a medical department (e.g. employee health) within the organization. Individuals responsible for the laser safety program must be knowledgeable of standards and regulations associated with laser use. This is not a highly regulated field on the user end (versus the manufacturing end) though some states have adopted revisions of the "Suggested State Regulations for Control of Radiation." Consensus standards and recommendations for safe use of lasers exist and should be followed; any deviation should be well documented within the laser safety program. Most standards are written to minimize hazards associated with a certain laser classification regardless of the setting in which it is used eliminating inconsistent application but maintaining the need for the institutional Laser Safety Officer to evaluate applicability. With proper organization, a laser safety program can have a positive impact on safety of the work environment. Some ideas and examples of program organization will be presented as well as a review of consensus standard recommendations for laser safety programs.

CEL-6 Adding Value to Your Radiation Protection Program. *Robert Emery; University of Texas-Houston*

The amount of value exhibited by an organization can be a major determining factor in its unaltered or continued existence. When management makes crucial organizational decisions, radiation protection programs can be overlooked because the value added is not always readily tangible. So health physicists must find a way to measure the vast amount of intangible value added by their programs., and the solution rests in the concept of "goodwill value". Goodwill value is an accounting term used to measure the difference between an organization's total market value and the value of its tangible assets. With radiation protection programs being challenged to fulfill their safety missions with ever-diminishing resources, the ability to effectively quantify the goodwill value established and maintained by such programs is critical. Successful examples of goodwill value quantification will be described and opportunities for further quantification will be presented for consideration and discussion.

Thursday, 7/3, 7:15 - 8:15 am

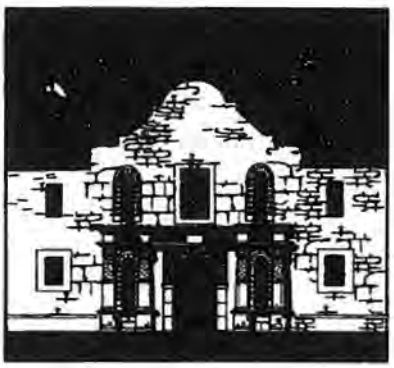
CEL-7 Licensee/NRC Dialogue: A Workshop Approach to Communication. *John Kinnemann, U.S. Nuclear Regulatory Commission*

Two apparently deliberate internal uptakes of licensed radioactive material resulted in increased NRC attention to the security and control of licensed material. Many licensees expressed strong concern regarding the increased inspection attention, the literal interpretation of NRC requirements for the security of licensed material and the resulting strong enforcement. This session will review the process which the NRC staff and a licensee used to develop and host a Workshop to assure effective communication between the staff and licensees and to assure the gathering of accurate and comprehensive information for NRC decision makers. The session will particularly focus on the features of the Workshop which were intended to foster clear communication, encouragement of expression and accurate recording of ideas and opinions. The results of the Workshop on Security and Control of Licensed Material will also be reviewed.

CEL-8 Current Status of Health Physics Academic Programs in the U.S. and Abroad. *Wesley E. Bolch; University of Florida*

One of the many responsibilities of the Health Physics Society's Academic Education Committee (AEC) is to periodically publish a comprehensive list of health physics academic programs. The most recent listing was published in the 1995-1996 Health Physics Education Reference Book. This document gives a detailed sum-

mary of each AA, BS, MS, and PhD program in the U.S. including the names of all full-time and part-time faculty, the faculty research interests, and the program enrollment and graduation numbers. The document is currently being revised for a 1997-1998 edition. This year, however, the information for U.S. programs is being combined with a comprehensive summary of non-U.S. programs in Europe, Asia, and other parts of the world, and will be published as an OECD document. This presentation will review the current status of health physics education programs in the U.S. and abroad based upon this OECD report. The presentation will conclude with a summary of current fellowship and scholarship opportunities for health physics students, and the current placement of HP graduates in the work force.



Health Physics Society 1997 Exhibitors

1998 ANNUAL MEETING BOOTH - MINNEAPOLIS, MN *Booth 1*
Display of informational material about the 1998 HPS Annual Meeting in Minneapolis sponsored by the North Central Chapter.

1998 MIDYEAR BOOTH - MOBILE, AL *Booth 2*

3M *Booth 230*
3M Empore™ Rad Disks for the selective separation and counting of strontium, radium and technetium radioisotopes.

AAHP *Booth 3*

ADCO SERVICES, INC. *Booth 331*
Radioactive, mixed and hazardous waste packaging, transportation and disposal services. Decontamination and decommissioning services available.

AMERICAN NUCLEAR SYSTEMS *Booth 231*
Instrumentation for Nuclear Spectroscopy featuring the MCA4000 family of High Speed Networkable MCAs, patented Quadratic Compression Conversion spectrometers for NaI, Quantum family of Windows analytical software, and detectors.

AMERSHAM CORP *Booths 505, 507*
A complete range of reference sources and solutions for instrument calibration and environmental monitoring.

ANALYTICS INC. *Booth 541*
Analytics Inc. produces custom NIST-traceable standards for calibration of gamma-ray spectroscopy systems and alpha/beta counters. A variety of liquid radioactivity standards are also available.

APFEL ENTERPRISES INC. *Booth 514*
REMbrandt,™ new dose-equivalent survey meter for neutrons based on superheated drop (bubble) technology. New science education kits on ionizing radiation.

APTEC NUCLEAR INC. *Booths 219, 221*
Aptec manufactures instrumentation for alpha/beta/gamma surface contamination plus portable or PC based MCA and analysis software.

ATL INTERNATIONAL INC. *Booth 218*
ATL International, Inc., provides radiation protection services such as V&V surveys to meet MARSSIM; mapping and radiation survey systems (MARSS) for site characterization and emergency preparedness; radioanalytical sample analysis (new lab).

BATTELLE, PNNL *Booth 113*
Battelle's Health Protection Department offers services in all aspects of health protection. These include: Instrument Testing, Dosimeter Irradiations, HP Program Assistance, Emergency Preparedness, Exposure Assessment, Dosimetry Services, Industrial Hygiene, and Rad Engineering.

BECKMAN INSTRUMENTS, INC. *Booth 303*
Liquid scintillation counters and supplies for the detection and analysis of alpha, beta and gamma emitters, including standards, cocktails, solid scintillation media and vials.

BICRON•NE *Booths 412, 414*
Bicron•NE offers an extensive range of Health Physics instrumentation covering: installed surface contamination monitors, protable radiation survey meters & probes, automated scrap systems, radiological therapy & diagnostic dosemeters and the Harshaw TLD line of materials & readers including the Autoscan 60 Track Etch Reader.

BIONOMICS INC. *Booth 518*
Full service waste collection, packaging, transportation and disposal. Radioactive and mixed wastes.

BUBBLE TECHNOLOGY INDUSTRIES INC. *Booth 437*
Neutron bubble detector dosimetry system, Microspec-2 portable spectroscopic survey systems and Rospec high resolution neutron spectrometer.

CANBERRA NUCLEAR PRODUCTS *Booths 405, 407, 409, 504, 506, 508*
Canberra will exhibit a variety of equipment for Gamma and Alpha Spectroscopy as well as Health Physics record keeping software. New products include Digital Signal Processing modules for Gamma Spectroscopy and the new Genie-2000 software.

DOSIMETER *Booths 312, 314*
Advanced Smart Ion Survey Meter.

DOSITEC INC. *Booth 121*
Dositec Model L36 Dosimeter which monitors the radiation dose and dose rate level. Dositec Model 200B Reader which is an interface device from the dosimeter to a PC, Dosimetry System Software to calibrate and program the dosimeter parameters.

EBERLINE INSTRUMENTS *Booths 524, 526*
A complete range of Health Physics instruments including contamination monitors, environmental monitors, portable survey meters and electronic dosimeters.

EG&G ORTEC *Booths 337, 339, 341, 436, 438, 440*
Fed up with the same old instrumentation solutions: unreliable, difficult to use, drift prone? EG&G ORTEC's 32-bit software with Digital networked spectroscopy hardware and featherweight portable spectrometers will make you smile. Come and see us.

EXPLORANIUM *Booth 220*
Exploranium designs and manufactures a full range of radiation detection equipment including portable gamma ray spectrometers, vehicle monitoring systems, airborne, carborne and network systems.

F&J SPECIALTY PRODUCTS, INC. *Booth 332*
Air-Sampling and air flow calibration systems for the Radiation Protection Specialist including disposable supplies such as filter paper, charcoal and zeolite cartridges and radon detection products.

femto-TECH, INC. *Booth 430*
Continuous radon monitors, tritium monitors.

GAMMA PRODUCTS, INC. *Booth 333*
Gamma Products, Inc. manufactures automated gamma counting systems for Marinelli beakers and other samples, and automated or manual alpha/beta counting systems. Also specialized in low level shielding.

GE REUTER STOKES *Booth 531*
He3 neutron proportional counters for industrial and safeguards applications. X-ray proportional counters; gamma ion chambers, fission counter chambers, compensated/uncompensated ionization chambers. The high pressure ion chamber for environmental monitoring applications.

GTS DURATEK *Booths 139, 141*
GTS Duratek offers services in all aspects of radiation protection, including waste treatment processing; health physics training and consulting; instrument repair, calibration and rental; waste packaging, transportation and disposal; site characterization; decommissioning and decontamination; environmental remediation and waste management support; staff augmentation; and special nuclear material handling.

HEALTH PHYSICS INSTRUMENTS *Booth 500*
HPI manufactures high quality radiation measuring instruments. This includes survey meters, dosimeters, area monitors, neutron REM meters and other specialized measuring equipment.

HELGESON SCIENTIFIC SERVICES *Booth 433*
HSS provides a complete range of state-of-the-art personnel and waste monitoring equipment and complementary health physics services, including mobile whole body counting units and surface survey instruments.

HI-Q ENVIRONMENTAL PRODUCTS CO. *Booth 520*
Air sampling equipment and systems.

HOLADAY INDUSTRIES *Booth 439*
Meters and monitors for measuring electric and magnetic fields in the non-ionizing frequency spectrum. Induced current meters, protective clothing and monitors will be featured.

HP PUBLICATIONS *Booths 4, 5*

ICN WORLDWIDE DOSIMETRY *Booths 501, 503*
ICN Worldwide Dosimetry offers a wide selection of film and TLD dosimeters and associated services. Please stop by our booth.

ISOTOPE PRODUCTS LABORATORIES *Booths 225, 227*
IPL is a NIST traceable laboratory supplying radioactive standards, sources and nuclides for counting room use, instrument calibration and environmental monitoring, specializing in custom requirements.

J. L. SHEPHERD & ASSOCIATES *Booth 340*
Calibrators and irradiators in self contained, beam and panoramic configurations with Gamma, Beta and Neutron sources. Source/device decommissioning/recycling. Type A and Type B shipping containers. CHAMMP demonstrations.

K & S ASSOCIATES, INC. *Booth 236*
Accredited Calibration Services - Accredited Instrument Calibration Laboratory (HPS), Accredited Dosimetry Calibration Laboratory (AAPM), kVp calibrations, custom cable, repair services.

KEITHLEY INSTRUMENTS, INC. *Booth 517*
Celebrating over 50 years of quality, service, innovation, and integrity, Keithley is a leader in radiation measurements. Keithley will display applications of laser heated thermoluminescence dosimetry technology, as well as precision electronic dosimeters, x-ray field service equipment and quality assurance products.

LANDAUER, INC. *Booths 401, 403*
Radiation dosimetry services, i.e. badges, software.

LND INC. *Booth 215*
Nuclear radiation detectors-GM tubes, BF3 HE3, ion chambers, proportional counters, gas sampling, flow and fission chambers-standard and custom designed, and manufactured to your specifications.

LUDLUM MEASUREMENTS, INC. *Booths 404, 406*

Ludlum Measurements, Inc., manufacturer, will display instrumentation used to detect and measure nuclear radiation.

MGP INSTRUMENTS *Booth 502*

MGP Instruments provides a full range of instrumentation, engineering services and software solutions for Health Physics as well as radiation monitoring challenges.

MJW CORPORATION INC. *Booth 539*

MJW Corporation provides Radiological Consulting Services and Multimedia Computer Software. Titles on display include the Graphical Electronic Dosimetry Display System, Visual Survey Data System, Interactive Video Tour System, Health Physics Fundamentals Training Program and Spill Response Trainer.

NAIAD TECHNOLOGIES INC. *Booth 232*

Naiad Technologies will feature a new produce, Radaway™, which reduces liquid low level radioactive waste (LLRW) into a small, compactable, dry solid. Also, look for Fluoraway™, a product that binds fluorescent compounds such as ethidium bromide, and other toxic DNA stains.

NATIONAL NUCLEAR CORP *Booth 533*

NNC manufactures contamination monitors, scrap monitors, and waste monitors. XETEX, a division of NNC, manufactures dosimeters, ratemeters, area monitors, and sample counters. Reactor Experiments, a division of NNC, offers radiation shielding and neutron activation foils and flux wires.

NFS-RADIATION PROTECTION SYSTEMS *Booth 240*

NFS Radiation Protection Systems provides Access Control, Exposure Tracking, Sample Management, Instrument Calibration, and Performance Checking software solutions to the Nuclear Industry. Please stop by our booth for a demonstration or contact Henry Bailey at 423-283-7411 or at hbailey@nfsrps.com.

NORTH AMERICAN SCIENTIFIC, INC. *Booth 133*

North American Scientific, Inc. manufactures and markets a broad line of low-level NIST traceable radiation sources and standards for calibration, measurement and control. Please visit our booth for a copy of our New 1997 Product Catalog.

NORVELL PROTECTIVE CLOTHING MFGS *Booth 213*

Recognized as the innovator of many of the nuclear industry's standard protective garments, Norvell is a woman-owned business with a 25-year history of reliable service and quality garment manufacture.

NRRPT *Booth 119*

NSSI *Booth 432*

Complete Recycling & TSD Services for Generators of Hazardous & Nuclear Mixed Waste.

NUCLEAR FUEL SERVICES INC. *Booth 237*

NFS offers full service radiological environmental remediation, mixed waste treatment and Type B waste shipping services.

NUCLEAR NEWS/ RADWASTE MAGAZINE *Booth 228*

Nuclear News is the monthly news magazine of the nuclear industry, published by the American Nuclear Society. Also published by the Society is Radwaste Magazine, a bimonthly covering radwaste management at utilities, US Department of Energy sites, etc.

NUCLEAR RESEARCH CORP. *Booths 313, 315*

NRC's Smart Survey Meter, the ADM-300, usable with 17 different probes, capable of measuring α, β, γ, n and combinations thereof, and from 10 uR/h to 10,000 R/h; the latest/best telescoping survey meter, ADM-300X; the new rugged low cost underwater probe and the fixed 10 ft probe for monitoring waste vehicles; G.M. Tubes.

ORDELA, INC. *Booth 336*

Radiation detection and measurement instrumentation for RAPID Alpha assay.

ORISE *Booth 512*

Oak Ridge Institute for Science and Education offers a wide Range of health physics services: Radiological site assessment, health physics training, internal dosimetry, medical response to radiation accidents.

OUTREACH LABORATORY *Booth 212*

Outreach is a full-service analytical laboratory specializing in lung solubility classification and radiochemical analyses on bioassay, hazardous waste and environmental samples. Customer satisfaction guaranteed. Quality data, rapid turnaround, fair prices.

OXFORD INSTRUMENTS, INC. *Booth 239, 241*

Oxford Instruments Inc, Nuclear Measurements group is a manufacturer of nuclear counting systems. Product lines include gamma and alphaspectroscopy systems, low level alpha and beta counting systems, NIM, and educational counters.

PACKARD INSTRUMENT COMPANY *Booth 509*

Packard Instrument Company manufactures Tri-Carb® low level liquid scintillation counting (LSC) systems for environmental and radioactive waste sample analysis from ^{3}H to $^{90}Sr/^{90}Y$, including simultaneous total alpha-total beta analysis.

PANASONIC INDUSTRIAL COMPANY *Booth 309*

Electronic Dosimeter System and Extremity TLD System.

PERMA-FIX ENVIRONMENTAL SERVICES *Booth 233*

Handling of Radioactive, mixed and hazardous wastes to include: Processing & Disposal of LSVs; distillation; bulking of organics for incineration; Research & Development of disposal options for "orphaned" wastes; site remediation; decay-in-storage & analytical services.

POST OFFICE DISPLAY *Booth 529*

PRINCETON ELECTRONIC SYSTEMS INC. *Booth 513*

Model PN-114 Portable Spectroscopy System. Fully integrated computer and 1024 channel acquisition, storage, display, and analysis system. 12 lbs (including battery) total weight carried by shoulder strap. Model PM-201 PMT base with High Voltage power supply, bias network, preamp and shaping amp.

PRINCETON GAMMA-TECH, INC. *Booth 214*

High purity Germanium and Si(Li) X-ray Detectors, as well as mechanically cooled spectrometers, portable MCA's and Gamma Spectroscopy Software.

PROTEAN INSTRUMENT CORPORATION *Booth 527*

PRO-TEM, INC. *Booth 400*

Cost effective, client-server information solutions for the Energy Industry. Health Physics products include modular systems from the ARACS access control system to PRORAD for complete health physics management. Hands-on demonstrations.

QUANTRAD SENSOR, INC. *Booth 525*
Detectors and instrumentation for the detection and analysis of gamma, alpha, x-ray and neutron sources. New products include the Scout MCA, a portable "palmtop" system for in situ analysis of radioisotopes.

RAD ELEC INC. *Booth 402*
Rad Elec's versatile E-PERM® System offers electret ion chamber technology for passive monitoring of radon, thoron, environmental gamma, tritium, alpha soil and surface contamination, NORM, x-ray dose and quality, and neutrons.

RADCAL CORP *Booth 408*
Radcal manufactures instruments for x-ray QA, compliance, health physics, medical physics and x-ray service applications.

RADIATION DETECTION COMPANY *Booth 140*
RDC provides film and TLD dosimetry services; instrument calibration; wipe test analysis for sealed radioactive sources. Check out our web site at RadiationDetection.com

RADIATION SAFETY ASSOCIATES *Booth 305*

RADOS TECHNOLOGY INC *Booth 431*
Rados Technology offers a complete product line of dosimetry and contamination monitoring equipment.

RSO, INC. DBA RADIATION SERVICE ORG *Booth 224*
Visit RSO on our Web Page at: http://www.rsoinc.com

S. E. INTERNATIONAL INC. *Booth 226*
Manufacturers of radiation detection meters, monitors. Handheld, portable instrumentation capable of detecting alpha, beta, gamma and x-rays. Dosimeters also available.

SAFE TRAINING SYSTEMS LTD. *Booth 540*
STS designs and manufactures simulators for radiation monitoring training: 800 series for surface contamination; 900 series for radiation field measurements; and 600 series for airborne release and plumes monitoring - the "PLUMES" system.

SAIC/RADeCO *Booths 413, 415*
SAIC RADeCO provides a complete line of quality products and services including: RADeCO air samplers, air flow calibrators, portable alpha analyzers, calibration services, alarming dosimeters, personnel contamination monitors, radioiodine sampling cartridges, radiation monitoring systems, training and consulting services.

SCIENTECH, INC. *Booth 538*
Scintech will be demonstrating the "InfoWorks" Data Management System featuring the Radiological Protection and Access Control Software, the Procedure and Document Control System software "ProNet," the Windows™ based laboratory instrument QA/QC software package "Lab Stats Pack," and the computer based training development system software "Course Master."

SCINTEX LTD. *Booth 441*
Wide range gamma/beta monitor; tritium monitor; control room equipment.

SCIONIX USA *Booth 536*
Scintillation Crystals and Detectors.

SIEMENS ENVIRONMENTAL SYSTEMS *Booth 537*

Siemens Environmental Systems provides electronic dosimetry products and systems to nuclear utilities, DOE and hospital users. The unique Siemens EDD Dosimeter can be used as an alternative to film or TLD.

TECHNICAL ASSOCIATES *Booth 307*

Recent editions to T/A: Health Physics instrument line including more sensitive and more rugged tritium surface monitors and large area, GM and scintillation detectors.

TELEDYNE BROWN ENGINEERING - ENV. SVCS. *Booth 127*

TLD - Reader and TLD materials, Scintillation Detectors, Environmental Analysis, Radiological Surveys.

THE INDUS GROUP *Booth 238*

The Indus Group is the premier provider of enterprise information management systems for energy and process industry companies worldwide. PASSPORT Software Solutions™ provide depth of function and innovative technology that enable our customers to reduce costs, increase productivity, and comply with governmental regulation.

THERMO NUTECH *Booth 530*

Services include Health Physics Consulting, D&D, Radiochemistry & Dosimetry.

THOMAS GRAY & ASSOCIATES, INC. *Booth 301*

Processing & disposal of LLRW, mixed waste, sealed sources, NORM & MARM waste, decay in storage, transportation and health physics services.

TVA NUCLEAR - RADIOLOGICAL SERVICES *Booth 338*

Support services for the Nuclear Industry. Services include: Radioanalytical Analyses, Radiological Environmental Monitoring, Instrument Calibration and Repair, External Dosimetry.

US ECOLOGY, INC. *Booth 532*

Brokerage services including processing and disposal of LLRW and mixed waste, field services including remediation projects.

US NUCLEAR REGULATORY COMMISSION *Booth 521*

The mission of the US Nuclear Regulatory Commission is to ensure adequate protection of the public health and safety, the common defense and security, and the environment in the use of nuclear materials in the United States.

VICTOREEN, INC. *Booth 330*

Victoreen, Inc., celebrating their 70th anniversary, is an international supplier of micro-processor based nuclear instruments and radiation monitoring systems. These instruments are designed for use in health physics, medical physics and non-destructive testing applications.

W. H. HENKEN INDUSTRIES, INC. *Booth 515*

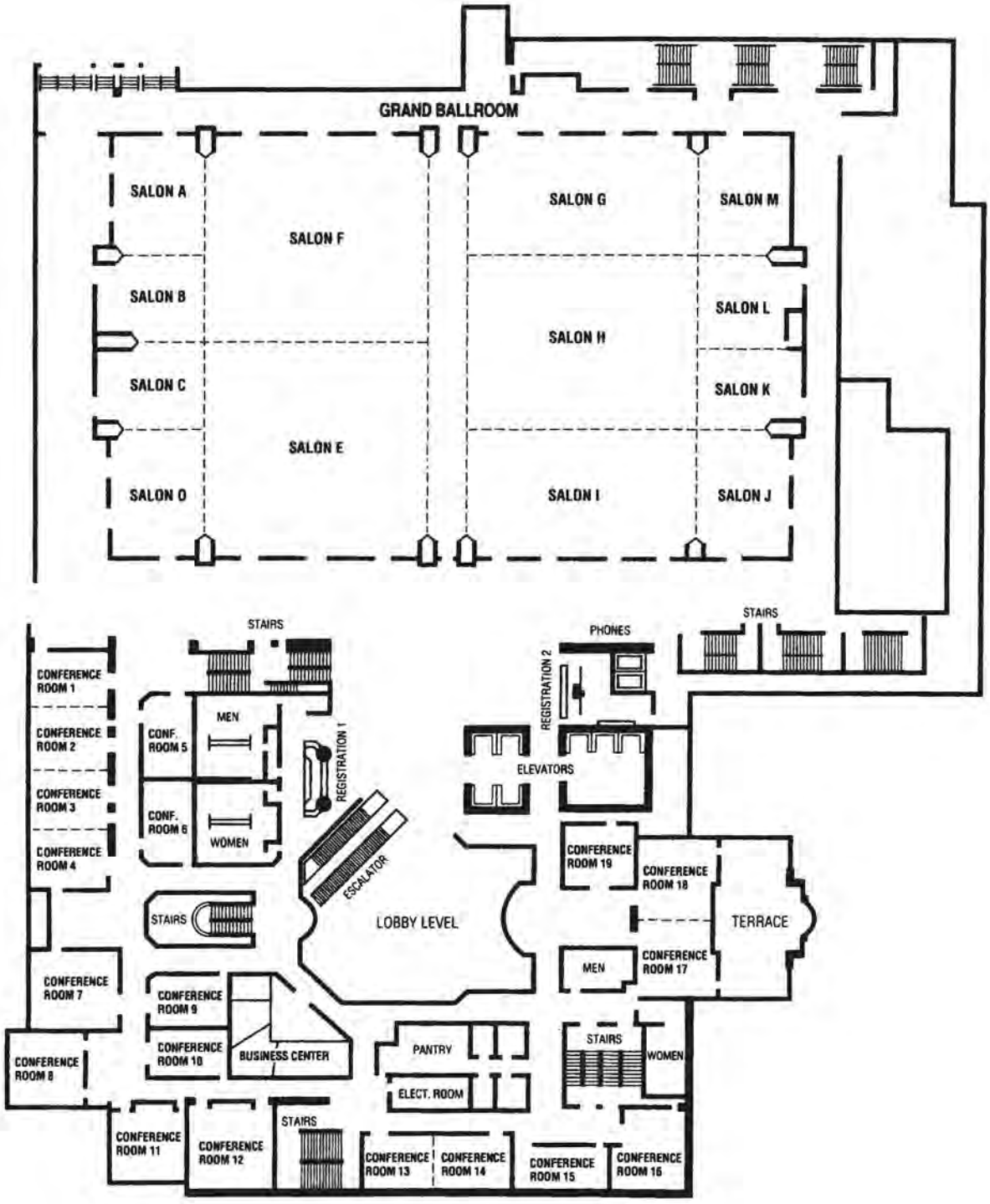
Radiation detection equipment and calibration services, leak testing of sealed sources.

YANKEE ATOMIC ELECTRIC CO. *Booth 216*

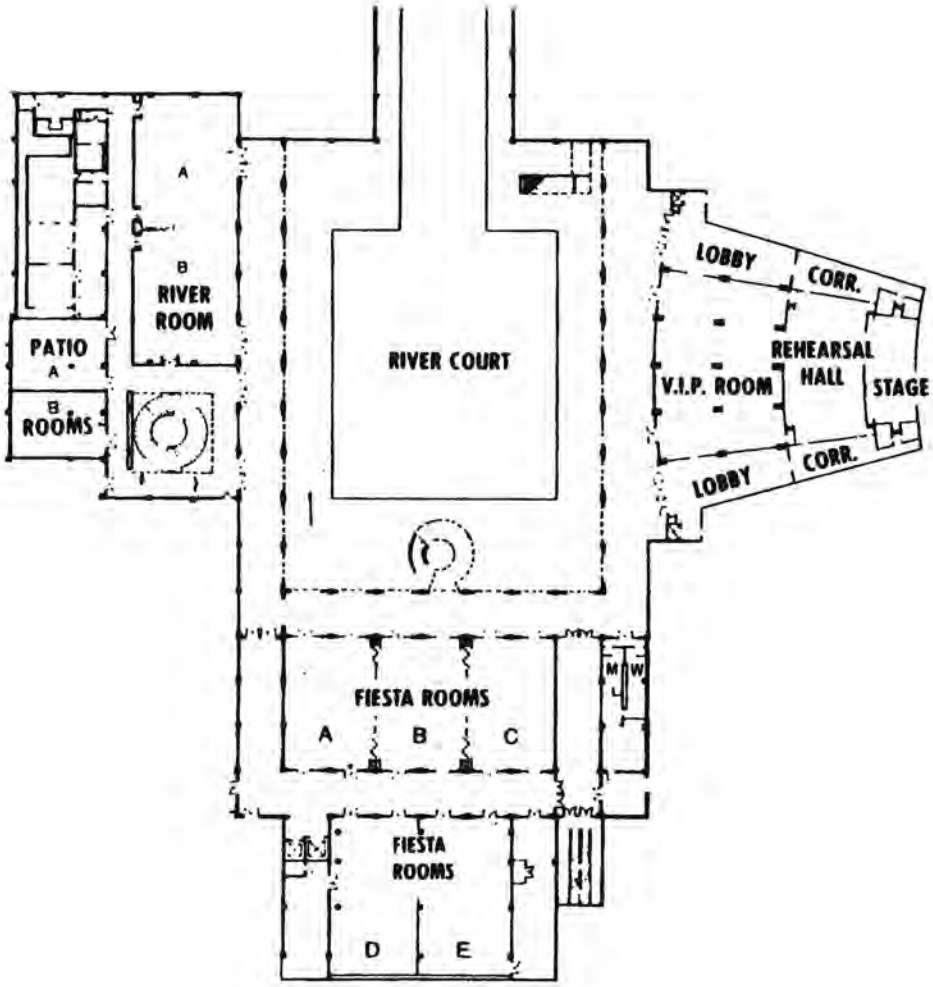
Radioanalytical laboratory and Dosimetry services, General health physics services, decommissioning and decontamination services, site characterization and remediation services.

AUTHOR INDEX

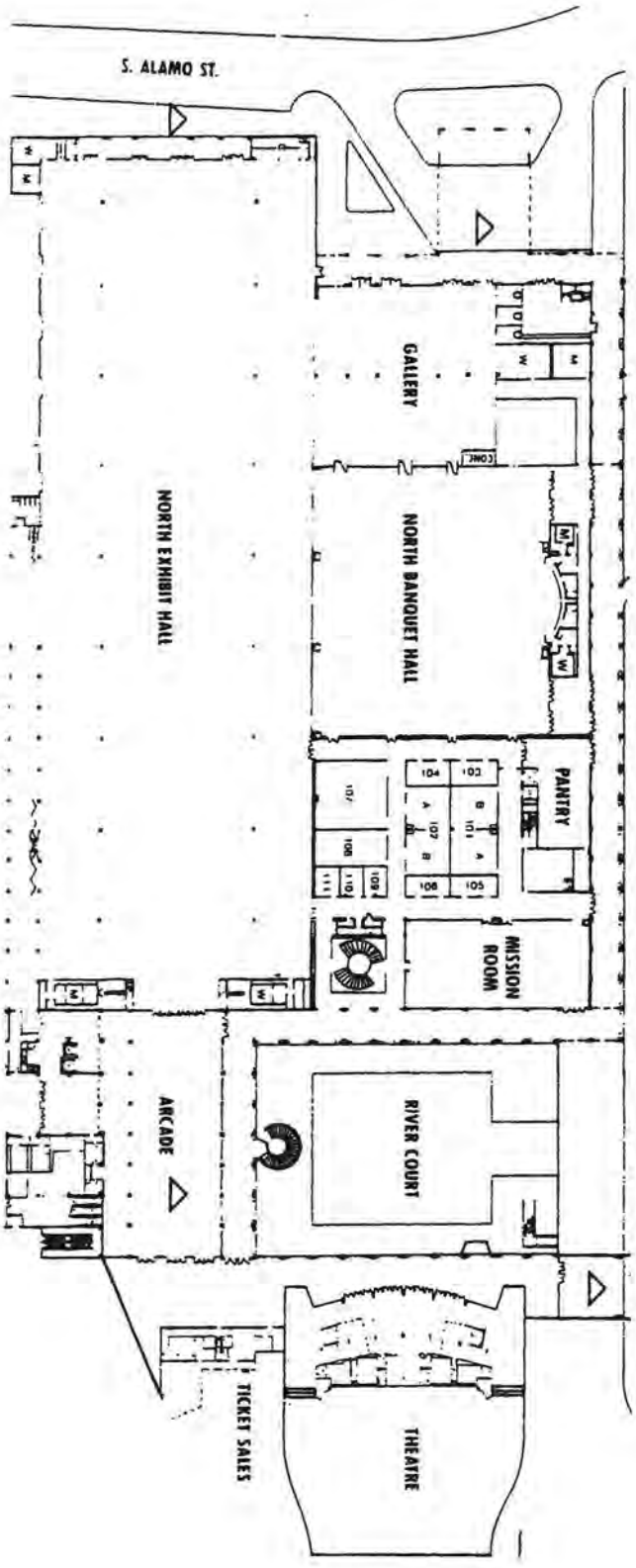
Marriott Rivercenter



San Antonio Convention Center
Meeting Rooms, River Level



San Antonio Convention Center
Meeting Rooms, Street Level



Saturday, June 28

AAHP I In Vivo Measurements of Internally Deposited Radionuclides
8 am-5 pm *Salon K-Marriott Rivercenter*

AAHP II The Basic DOT/NRC Nuclear Transportation Regulation After the 1995 Amendments
8 am-5 pm *Salon L-Marriott Rivercenter*

AAHP III Environmental Surveillance Methods for Radioactive Materials
8 am-5 pm *Salon M-Marriott Rivercenter*

Sunday, June 29

PEP Courses
Marriott Rivercenter

1-A thru 1-J 8-10 am

2-A thru 2-J 10:30am-12:30 pm

3-A thru 3-J 2-4 pm

PEP A = *Salon A*

PEP B = *Salon B*

PEP C = *Salon C*

PEP D = *Salon D*

PEP E = *Salon K*

PEP F = *Salon J*

PEP G = *Salon L*

PEP H = *Salon M*

PEP I = *Conference Rm. 1/2*

PEP J = *Conference Rm. 3/4*

Welcome Reception
6-7:30 pm *Salons E/F Marriott Rivercenter*

Note: All events will take place in the San Antonio Convention Center except when noted otherwise.

Monday, June 30

CEL-1 Recent Developments in Radiation Litigation
7:15-8:15 am *River*

CEL-2 How to Deal with Radiation Risk Perceptions...
7:15-8:15 am *Mission*

ABHP Exam - Part I
8:30-11:30 am *Alamo Ballroom Marriott Riverwalk*

MAM-A Plenary Session
8:30 am-Noon *Lila Cockrell Theatre*

Professional Enrichment Program
12:15-2:15 pm

M-1 Current Approaches to Regulating Public.... *Fiesta D*

M-2 High Dose Dosimetry *Fiesta E*

M-3 Introduction to Naturally Occurring ... *Rm. 101*

M-4 Recent Trends in Rad. Detector Develop. *Rm. 102*

M-5 HP Resources on the Internet *Rm.107*

M-6 DOE Low-Level and Mixed Low-Level ... *Rm. 108*

ABHP Exam - Part II
1:30-6:30 pm *Alamo Ballroom Marriott Riverwalk*

MPM-A Interactive Poster Session
1:30-3 pm *HPS Exhibit Hall*

MPM-B Risk Analysis
3-3:45 pm *Fiesta D*

MPM-C Optically Stimulated Luminescence Dosimetry
3-5:30 pm *Fiesta AB*

MPM-D Biokinetics/ Bioeffects
3-4 pm *Fiesta E*

MPM-E Decommissioning and Release Criteria
3-5 pm *River*

MPM-F Regulatory/Legal Issues
3-5:15 pm *Mission*

Student Reception
5-6 pm *Conf. Rm. 13/14 Marriott Rivercenter*

Govt Section Business Meeting
5:45-6:15 pm *River*

Tuesday, July 1

CEL-3 Ten Principles & Ten Commandments for Radiation....
7:15-8:15 am *River*

CEL-4 Radiation Dose from Radiopharmaceuticals....
7:15-8:15 am *Mission*

TAM-A Student I *107/*
8:30 am-12:30 pm *Exhibit Hall*

TAM-B1/B2/B3 AAHP Strategic Planning Sess. I/II/III
8:30 am-Noon *Rooms 101/ 102/108*

TAM-C Radiation Policy & Standards
8:30 am-Noon *River*

TAM-D Operational HP I
8:30-10:15 am *Mission*

TAM-E Multi-Agency Radiation Survey and Site ....
8:30-11:15 am *Fiesta AB*

TAM-F Commemorating the 50th Anniv. of the HASL/EML
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1:30-5 pm *River/Exhibit Hall*

TPM-B AAHP Strategic Planning Sess IV & **Bus. Mtg.**
2:30-5:30 pm *Fiesta E*

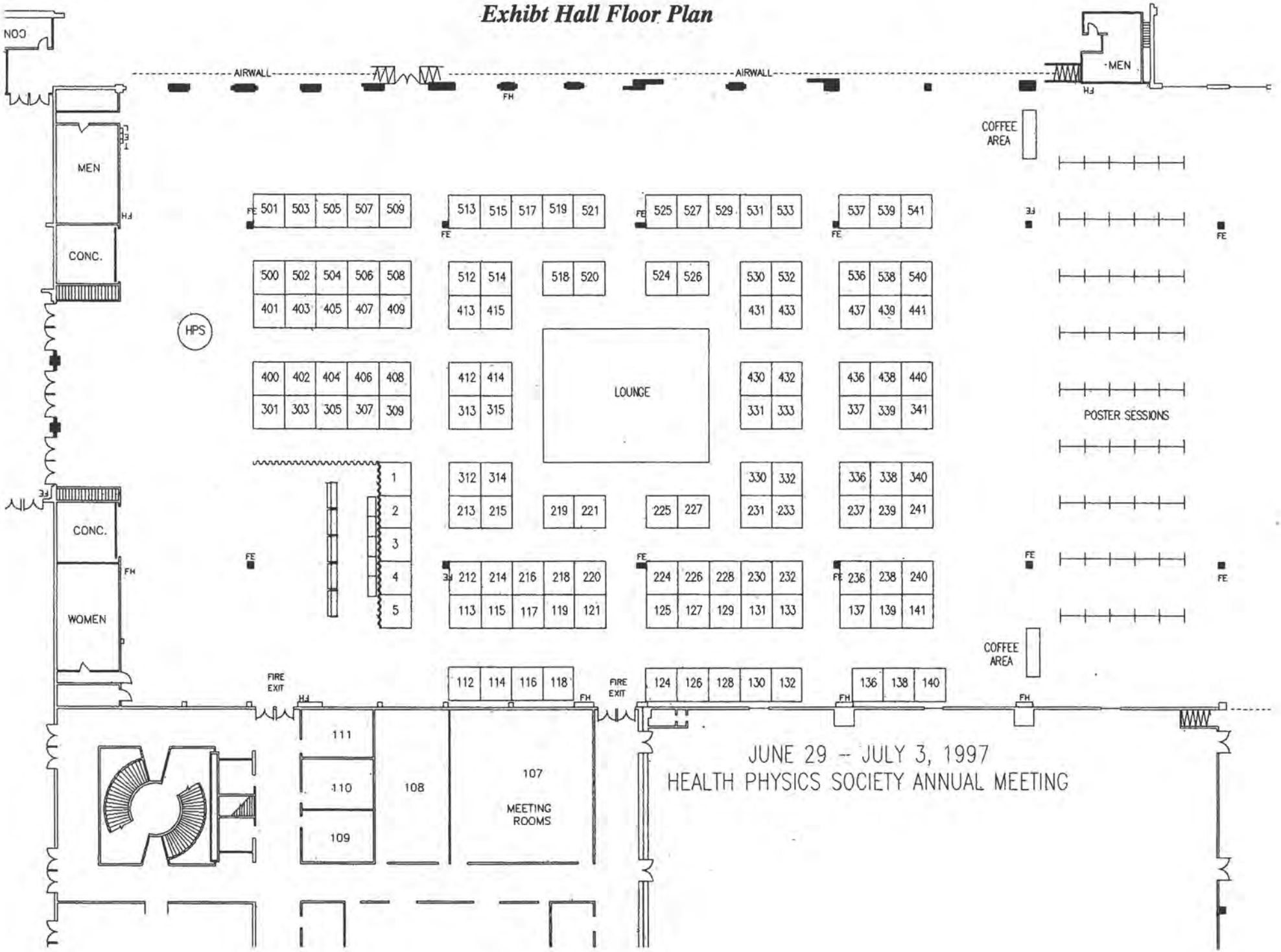
TPM-C Medical HP
2:30-4:30 pm *Room 107*

TPM-D Operational HP II
2:30-4:45 pm *Mission*

TPM-E Power Reactor Section Session/**Bus. Meeting**
2:30-5:30 pm *Fiesta AB*

TPM-F Recent Rad. Measurement Activities of the NCRP.....
2:30-5:15 pm *Fiesta D*

Exhibt Hall Floor Plan



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2:30-5:30 pm *Fiesta E*

TPM-C Medical HP
2:30-4:30 pm *Room 107*

TPM-D Operational HP II
2:30-4:45 pm *Mission*

TPM-E Power Reactor Section Session/**Bus. Meeting**
2:30-5:30 pm *Fiesta AB*

TPM-F Recent Rad. Measurement Activities of the NCRP.....
2:30-5:15 pm *Fiesta D*

Wednesday, July 2

CEL-5 Organization of a Laser Safety Program
7:15-8:15 am *River*

CEL-6 Adding Value to your Radiation Protection Program
7:15-8:15 am *Mission*

WAM-A Plenary Session
8:30 am-Noon *Lila Cockrell Theatre*

Professional Enrichment Program
12:15-2:15 pm

W-1 Low Level Radiation Risk Assess. and Its ...*Fiesta D*
W-2 Problem Solving for Health Physicists *Fiesta E*
W-3 A Field Perspective of 10 CFR 835 *Rm. 101*
W-4 Mitigating Rad. Dose to Patient and Staff... *Rm. 102*
W-5 Computer-Based Rad. Safety Training *Rm. 107*
W-6 HP Activities in Mitigating .... *Rm. 108*

WPM-A RSO Section Session
2:30-4:15 pm *River*

WPM-B Environmental I
2:30-4:45 pm *Fiesta AB*

WPM-C Waste Management/ Decommissioning
2:30-4:45 pm *Fiesta D*

WPM-D Radon Section Sess.
2:30-5 pm *Fiesta E*

WPM-E The Role of Dose Response Models in Radiation...
2:30-5 pm *Mission*

Science Teacher Workshop Training
2:30-5 pm *Conference Rm 8 Marriott Rivercenter*

RSO Section Bus. Meeting
4:15-5:30 pm *River*

Environmental Sect. Meeting
4:45-5:30 pm *Fiesta AB*

Radon Section Bus. Meeting
5-6 pm *Fiesta E*

HPS Annual Bus. Meeting
5:30-6:30 pm *River*

WPM-F Aerosol Measuremnts
6-8 pm *Salon D Marriott Rivercenter*

Thursday, July 3

CEL-7 Licensee/NRC Dialogue: A Workshop Approach to Communication
7:15-8:15 am *River*

CEL-8 Current Status of Health Physics Academic Programs
7:15-8:15 am *Mission*

THAM-A Environmental II
8:30 -11 am *Fiesta AB*

THAM-B Dosimetry (External and Internal)
8:30-11:45 am *River*

THAM-C Accelerator
8:30-11am *Fiesta D*

THAM-D Radiological Protection in Latin America
8:30 am-Noon *Mission*

Accelerator Section Business Meeting
11 am-Noon *Fiesta D*

Awards Luncheon
12:30-2:30 pm *Salons A/F Marriott Rivercenter*

Professional Enrichment Program
3-5 pm

TH-1 Standardization of Airborne Gamma-Ray Surveys *Fiesta D*
TH-2 Communicating Health Physics *Fiesta E*
TH-3 Radiation Dose to the Embryo/Fetus from Internal Emitters *Rm. 101*
TH-4 Radiochemistry Practices and Requirements Related to Environmental Characterization and Monitoring *Rm. 102*
TH-5 Advanced Internet Topics for the Health Physicist *Rm. 107*
TH-6 Mgmt of Low-Level Radioactive and Mixed Waste from a State Regulatory Perspective *Rm. 108*

Registration Hours

Saturday 3-6 pm
Marriott Rivercenter Hotel.

Sunday 7 am-7 pm
Marriott Rivercenter Hotel.

Monday 8 am-4 pm
Convention Center

Tuesday 8 am-4 pm
Convention Center

Wednesday 8 am-4 pm
Convention Center

Thursday 8 am-Noon
Convention Center

Exhibit Hall Hours

Monday Noon-5 pm
Convention Center
Free lunch for registered attendees

Tuesday 9:30 am-5 pm
Convention Center

Wednesday 9:30 am-4 pm
Convention Center

Breaks during the Week – 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!