Health Physics Society

53rd Midyear Meeting

26-29 January 2020 · Bethesda, Maryland

Bethesda North Marriott Hotel & Conference Center

Final Program

HPS | AAHP | USA CAN NRRPT | ABHP

CHP CONSULTANTS DOSIMETRY

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53rd Midyear Meeting

Health Physics Society

Bethesda North Marriott Hotel & Conference Center · 26-29 January 2020

HPS Board of Directors

Eric Goldin, President
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Steven King, Treasurer
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Board

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Jan Braun
Thomas Johnston
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Thomas Morgan
Tim Taulbee
Jeffrey Whicker
Latha Vasudevan

Program Committee/Task Force

Program Committee Chair: Chris Shaw
Task Force Chair: Megan Lobaugh
Jason Davis
Hannah Graham
Tim Kirkham
Jack Kraus

Looking for WiFi?

Network: Marriott_CONFERENCE
Password: HPSM

Thank you to our Sponsor

Dan Caulk Memorial Fund

Table of Contents

Registration Hours

Ballroom Foyer

Sunday 26 January
3:30 PM-5:30 PM

Tuesday 28 January
7:30 AM-3:00 PM

Monday 27 January
7:30 AM-3:00 PM

Wednesday 29 January
8:00 AM-10:00 AM

Exhibit Hours

Grand Ballroom D-H

Monday

9:30 AM – 6:30 PM. . . . . Exhibits Open
9:30 AM – 10:00 AM. . . . . Coffee Break
12:00 PM – 1:30 PM. . . . . Complimentary Lunch
1:00 PM – 2:00 PM . . . . . Poster Session
3:00 PM – 4:00 PM. . . . . Coffee Break
5:00 PM – 6:30 PM. . . . . Exhibitor Reception

Tuesday

9:30 AM – 4:00 PM. . . . . Exhibits Open
9:30 AM – 10:00 AM. . . . . Coffee Break
12:00 PM – 1:30 PM. . . . . Complimentary Lunch
1:00 PM – 2:00 PM . . . . . Poster Session
3:00 PM – 4:00 PM. . . . . Coffee Break

HPS COMMITTEE MEETINGS

All Committee Meetings are in the Bethesda North Marriott Hotel & Conference Center

Saturday 25 January 2020

Executive Committee Meeting and Lunch
12:00 PM – 5:00 PM — Linden Oak

Board Reception
6:00 PM – 7:30 PM — Hospitality Suite 131

Sunday 26 January 2020

HPS Board Meeting
8:00 AM – 5:00 PM — Linden Oak

AAHP Executive Committee
8:00 AM – 5:00 PM — Brookside A

Program Committee Meeting
10:00 AM – 12:00 PM — Middlebrook

Science Support Committee Meeting
1:00 PM – 2:00 PM — Oakley

Monday 27 January 2020

HPS Nominating Committee
12:30 PM – 1:30 PM — Linden Oak

AAHP Nominating Committee
2:30 PM – 4:30 PM — Linden Oak

Tuesday 28 January 2020

MHPS Board Meeting
1:00 PM – 2:00 PM — Oakley

AAHP Nominating Committee
2:30 PM – 4:30 PM — Oakley

Wednesday 29 January 2020

Program Committee Meeting
12:00 PM – 1:00 PM — Forest Glen

Speaker Ready Room

Middlebrook

Sunday	12:00 PM – 5:00 PM
Monday	8:00 AM – 5:00 PM
Tuesday	8:00 AM – 5:00 PM
Wednesday	8:00 AM – 10:00 AM

CAMPEP Application Statement

The program committee has requested approval for 17.1 MPCEC for the midyear program.

Note For CHPs

The American Academy of Health Physics has approved the following meeting-related activities for continuing education credits for CHPs:

- Meeting attendance is granted 1 CEC per contact hour, excluding meals and business meetings;
- AAHP 8-hour courses are granted 16 CECs each;
- HPS 2-hour PEP courses are granted 4 CECs each;
- HPS 1-hour CELs are granted 2 CECs each.

SOCIAL EVENTS

All Social Events are in the Bethesda North Marriott Hotel & Conference Center

Sunday 26 January 2020

Welcome Reception
6:00 PM – 7:30 PM White Oak AB
Plan on attending the HPS Welcome Reception. This is an opportunity to meet friends and start your evening in Bethesda, MD. Cash bar and light refreshments will be available during the reception.

Monday 27 January 2020

Complimentary Lunch in the Exhibit Hall
12:00 PM – 1:30 PM Grand Ballroom D-H
Sponsored by Mirion Technologies

Poster Session
1:00 PM – 2:00 PM Grand Ballroom D-H

Exhibitor Reception
5:00 PM – 6:30 PM Grand Ballroom D-H
Join the exhibitors for food, a cash bar, and the latest in health physics equipment.

Tuesday 28 January 2020

Dine With Us – Women in Health Physics Section
12:00 PM – 1:00 PM White Oak A
Please visit with our vendors and grab a lunch on Tuesday and then join members of the Women in HP Section. This will be an opportunity to meet other members of the Women in HP Section and socialize and catch up. If you're not a member of the section but are interested in learning about the section, please feel free to join us!

Complimentary Lunch in the Exhibit Hall
12:00 PM – 1:30 PM Grand Ballroom D-H

Poster Session
1:00 PM – 2:00 PM Grand Ballroom D-H

Ludlum's Hands-on Calibration Concepts Training Course

Monday 27 January • 9:00 AM – 4:30 PM

Oakley

The free 8-hour training class offered by Ludlum Measurements, Inc. covers the basics of calibrating survey meters. It's a hands-on class with all the necessary equipment provided. The class covers both analog and digital meters.

Sign-up for FREE by emailing, training@ludlums.com

TECHNICAL TOURS AND NIGHT OUT

Monday 27 January

Tour of the Armed Forces Radiobiology Research Institute (AFRRI)

1:00 PM – 3:00 PM

AFRRI conducts research in the field of radiobiology and related matters that are essential to the operational and medical support of the Department of Defense. In support of its mission, AFRRI operates a 1-MW TRIGA reactor (Training, Research, Isotopes, General Atomics), and photo-irradiation laboratories.

This tour will meet in the hotel lobby at 12:20pm. Closed to additional registrations.

HPS Night Out – Midyear 2020

If you are interested in bowling Tuesday, January 28, 2020, please let us know. This is a No-Host event - HPS will make a reservation on behalf of the people attending. The cost will be $30 and will include two hours of bowling and rental shoes. Food on your own.

https://docs.google.com/forms/d/e/1FAIpQLSexfioOKUGqUFN7O1Mr1TEK5Pl6FD7G0G2rgVz87iqaVzkX9A/viewform

Tuesday 28 January

Tour of the United States Nuclear Regulatory Commission (USNRC) Emergency Operations Center (EOC)

1:00 PM – 2:00 PM (Tour 1)

2:00 PM – 3:00 PM (Tour 2)

The USNRC's EOC is located across the street from the conference hotel. Two groups of participants will be accommodated, one group at 1:00PM, and the other at 2:00 PM, for a one-hour tour, each.

Logistics: Registrants for the tour will convene in the lobby of the conference hotel at 12:40 PM, and walk across the street to tour the USNRC facility.

Thank you to the following HPS Sponsors

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2020 HPS MIDYEAR MEETING EXHIBITORS

Located in the Bethesda North Marriott Hotel & Conference Center, Grand Ballroom D-H

Exhibit Hours

Monday

9:30 AM – 6:30 PM. . . . . Exhibits Open
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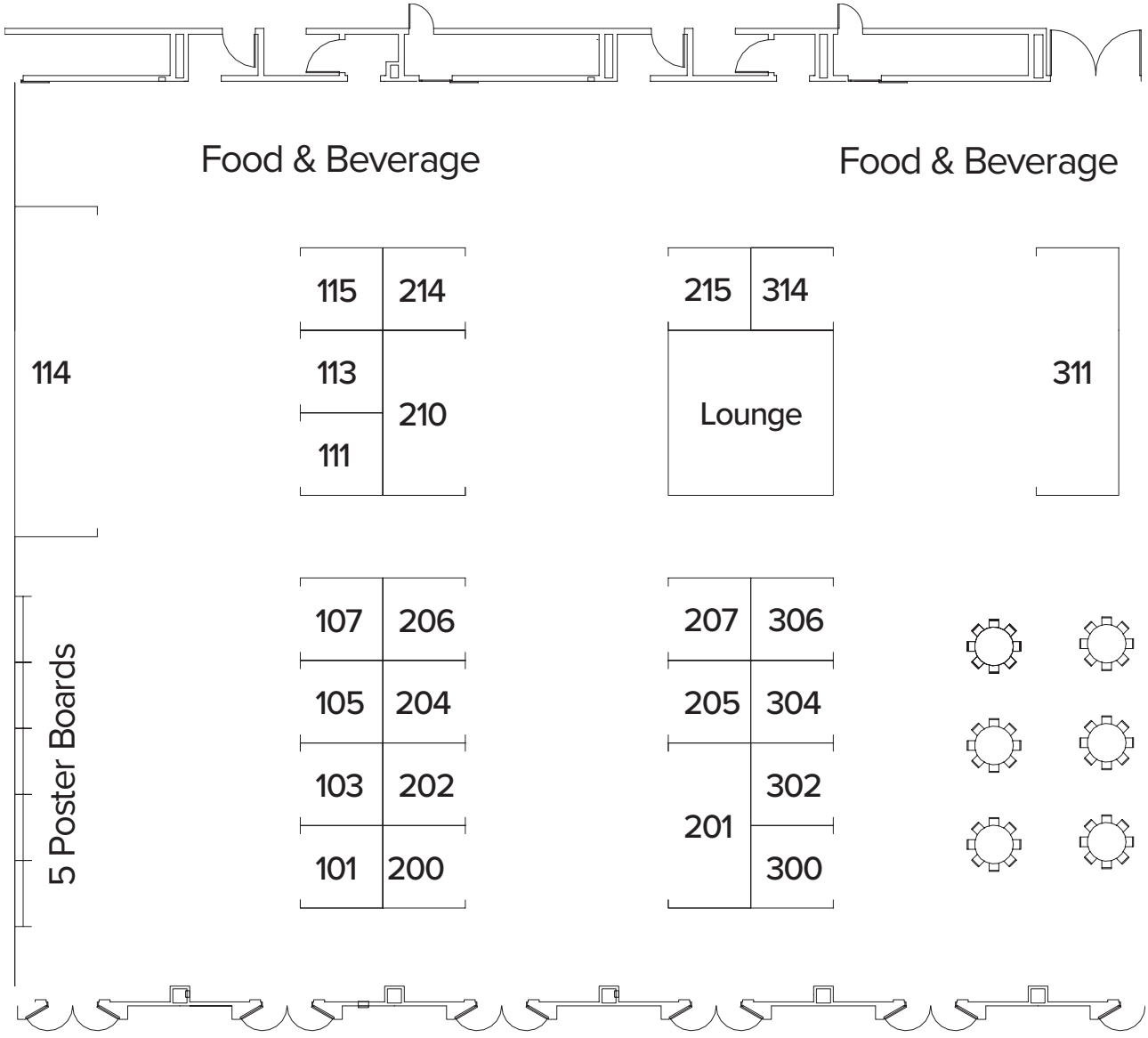
3:00 PM – 4:00 PM. . . . . .Coffee Break



2020 HPS MIDYEAR MEETING EXHIBITORS

Located in the Bethesda North Marriott Hotel & Conference Center, Grand Ballroom D-H

2020 HPS Annual Meeting — Booth: 304

National Harbor, MD
5-9 July 2020
hps.org/meetings

AAHP/ABHP — Booth: 105

www.hps1.org/aahp

Best Dosimetry Services — Booth: 205

7643 Fullerton Road
Springfield, VA 22153
703-451-2378
www.bestdosimetry.com

Best Dosimetry Services (BDS) provides personnel radiation dosimetry services for measuring and tracking the radiation dose received by workers occupationally exposed to ionizing radiation.

Bionomics — Booth: 200

Gold Sponsor

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865-220-8501
www.bionomics-inc.com

Bionomics Inc. is the leading service provider to generators of low level radioactive waste and mixed waste. With 30+ years in business, we have the proven experience and knowledge to reduce client risks. We disposition common and specialty waste streams, with scheduled pickups to meet the needs of our clients. We use our own trained and qualified brokers and technicians to provide specialty supplies, make pickups, track waste, and arrange for final processing and disposal at only the top-tier facilities. We provide disposal certificates for all shipments. We also perform specialty projects, such as decontamination, decommissioning, lab cleanouts, surveys, and disposal of legacy wastes.

C&C Irradiator Service, LLC — Booth: 103

Silver Sponsor

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Chase Environmental Group, Inc. — Booth: 206

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502-267-1455
www.chaseenv.com

Chase Environmental's Radiological Services Group is dedicated to servicing smaller quantity generators of low level and mixed radioactive waste – as well as providing remediation and license termination needs of a wide range of clients. Additionally – we provide a dedicated consulting service for industrial type clients who either use radioactive materials in their process – or who wish to prevent the introduction of radioactive materials to their processes. We go to great lengths to ensure quality, compliance, safety and value at every point in the process – while providing a great customer service experience. For more information – or to request a quote for services please contact John O'Neil at 877-389-2124 or joneil@chaseenv.com. Please visit our website at www.chaseenv.com

CHP Consultants/ CHP Dosimetry — Booth: 107

305 Cumberland View Rd.
Clinton, TN 37716
888-766-4833
www.chpconsultants.com

CHP Consultants provides half price radiological instruments and creative solutions. We are introducing the Counts.Pro™ device to revolutionize the collection of survey and laboratory data. Counts.Pro™ turns count rate meters into mobile laboratories that instantly update to secure cloud storage. CHP Dosimetry provides NVLAP-accredited TLD badge service with great service.

Eckert & Ziegler Isotope Products — Booth: 210

1380 Seaboard Industrial Blvd.
Atlanta, GA 30318
404-352-8677
www.ezag.com

Eckert & Ziegler Isotope Products provides high-quality, NIST traceable radioactive calibration sources, solutions, and gases. We operate three ISO 17025:2005 DAkkS accredited calibration laboratories, two in the USA and one in Germany. We are a radiochemical sample Proficiency Testing Provider, accredited to the ISO 17043:2010 standard by the ANSI National Accreditation Board (ANAB).

H3D, Inc. — Booth: 214

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HI-Q Environmental Products Co. — Booth: 300

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858-549-2820
www.HI-Q.net

HI-Q Environmental Products Company is an ISO 9001:2015 Certified designer/manufacturer that has been providing air sampling & monitoring equipment, systems and services to the nuclear and environmental monitoring industries since 1973. Our product line ranges from complete stack sampling systems to complex ambient air sampling stations. Our product catalog includes: Continuous duty high & low volume air samplers, radiation measurement instrumentation, radiation monitoring systems, air flow calibrators, radioiodine sampling cartridges, collection filter paper and both paper-only or combination style filter holders. Along with the ability to design complete, turn-key, stack and fume hood sampling system, HI-Q has the unique capability to test ducts and vent stacks as required by ANSI N13.1-1999/2011.

HPS Journal/Newsletter — Booth: 311

www.hps.org

J.L. Shepherd & Associates — Booth: 113

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818-898-2361
www.jlshepherd.com

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LabLogic Systems, Inc — Booth: 202

1911 N US Hwy 301, Suite 140
Tampa , FL 33619
813-626-6848
www.lablogic.com

LabLogic specializes in instrumentation and software dedicated to the measurement and analysis of radioisotopes used in environmental, pharmaceutical, nuclear medicine and research laboratories. Our products include liquid scintillation counters, radiation monitors, personal dosimeters, radio-chromatography instruments and software, microplate readers and a variety of radiation safety consumables. For further information please visit www.lablogic.com or call our office on 813-626-6848.

LANDAUER, RaySafe & Fluke Biomedical — Booth: 207

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Glenwood, IL 60425
708-755-7000
www.landauer.com

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LND, Inc. — Booth: 215

3230 Lawson Blvd.
Oceanside, NY 11572
516-319-1342
www.lndinc.com

For over 50 years LND, INC. has been a leading manufacturer of Nuclear Radiation Detectors. Products include GM Detectors, X-ray Proportional Counters, He3 and Bf3 Neutron Detectors, Ionization Chambers, Fission Counters, and Gas Sampling Detectors. Industries supported include Health Physics, Research, Homeland Security, Materials Analysis and thin foils production.

Ludlum Measurements, Inc — Booth: 201

501 Oak Street
Sweetwater, TX 79556
325-235-5494
www.ludlums.com

Ludlum Measurements, Inc. has been designing, manufacturing and supplying radiation detection and measurement equipment in response to the world's need for greater safety since 1962. Throughout its more than 5-decade history, it has developed radiation detection technologies and instruments in support of enhancing the safety of personnel and the environment.

Mazur Instruments — Booth: 314

200 South Wilcox Street #448
Castle Rock, CO 80104
303-325-7463
www.mazurinstruments.com

Mazur Instruments designs, develops and manufactures handheld survey meters used by professionals and organizations across the globe to detect, measure and monitor nuclear radiation. Made in the USA, the company's instruments are competitively priced and offer ruggedness, high reliability, outstanding battery life, autonomous data-logging, inline statistics and wireless connectivity.

Mirion Technologies — Booth: 114

Platinum Sponsor

5000 Highlands Parkway
Smyrna, GA 30082
800-243-4422
www.mirion.com

Mirion Technologies is a leading provider of innovative products, systems and services related to the measurement, detection and monitoring of radiation. The company delivers high quality, state of the art solutions that constantly evolve to meet the changing needs of its customers. With the addition of the Canberra brand in 2016, Mirion expanded its portfolio and the breadth of its expertise to bring a new standard of solutions to the market. Every member of the Mirion team is focused on enhancing the customer experience by delivering superior products, exceptional service and unsurpassed support. Mirion Technologies: Radiation Safety. Amplified.

ORTEC — Booth: 306

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ORTEC has been an industry leader in the design and manufacture of ionizing radiation detectors, nuclear instrumentation, analysis software, and integrated systems for over 55 years. Our products are deployed globally for Nuclear Security, Waste Management, Health Physics, and Radiochemistry Laboratory Applications. Visit our booth today and allow us to assist you with your nuclear measurement needs.

Radiation Safety & Control Services Inc (RSCS) — Booth: 101

93 Ledge Road
Seabrook, NH 03874
603-474-6720
www.radsafety.com

RSCS offers expertise in all aspects of radiation safety and measurement applications. We specialize in operational and decommissioning services for nuclear, industrial, medical, and government radiological facilities. Our services include health physics consulting, technical staffing, training, instrumentation (sales, installation, calibration, and repair), emergency planning, and specialized radiological characterizations and measurements.

Tracerco Ltd

Booth: 204

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www.tracerco.com/monitors

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Booth: 111

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Versant Medical Physics & Radiation Safety is the creator of Odyssey, a Radiation Safety Software suite used by pharmaceutical, industry, and healthcare providers. Versant Physics also provides exceptional quality consulting and support services including RSO support, Radiation Safety Audits, Surveys, Physics Calculations, and Personnel Dosimetry Badge Management services.

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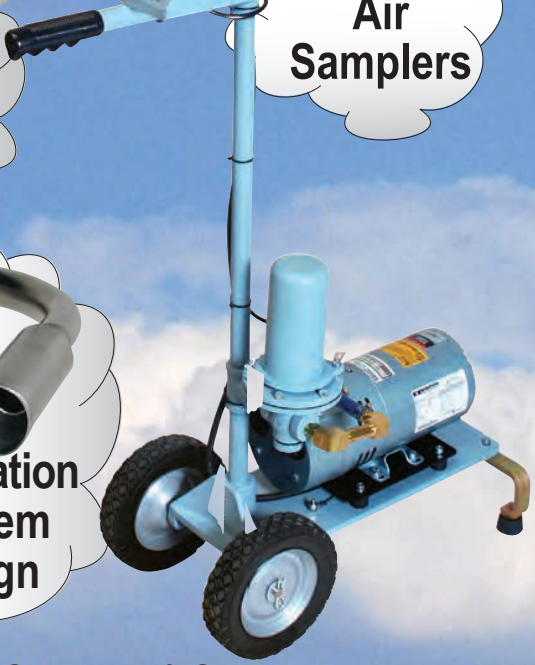

ANSI N13.1-2011 Stack Sampling Location Qualification Testing & System Design

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- TEDA Impregnated Carbon Cartridges

FINAL TECHNICAL PROGRAM

If a paper is going to be presented by other than the first author, the presenter's name has an asterisk (*)
All Sessions will take place in the Bethesda North Marriott Hotel & Conference Center

MONDAY

7:00 AM – 8:00 AM **Ballroom A**

CEL-1
Can We Talk?
Johnson R
Radiation Safety Counseling Institute

8:15 AM – 9:30 AM **Grand Ballroom BC**

PL-1
Introduction and Opening Plenary Session

8:20 AM **PL-1.1**
Welcoming comments
Goldin E
HPS President

8:30 AM **PL-1.2**
Remarks of NRC Commissioner David Wright
Wright D
NRC Commissioner

9:00 AM **PL-1.3**
The Intersection of Radiation Science and Communication
Edwards J
EPA

9:30 AM COFFEE BREAK
Exhibit Hall

10:00 AM – 11:30 AM **Grand Ballroom A**

MAM-A
Environmental
Chairs: Claude Wiblin, Bruce Biwer

10:00 AM **MAM-A.1**
Radioactive Dust Emissions Across Ecosystems
Whicker J, McNaughton M, Breshears D
Los Alamos Nat. Lab., Univ. Arizona

10:15 AM **MAM-A.2**
Environmental Impacts of Acid In-Situ Recovery Uranium Mining
Alemayehu B, McKinzie M
NRDC

10:30 AM **MAM-A.3**
Technical Basis for Clearance of VLLW Soil to Landfills
Wiblin C, Gaul W, Reese J
Tidewater, Inc

10:45 AM **MAM-A.4**
EPRI Demonstration of an Autonomous Site Characterization Vehicle
McGrath R, Bronson F
EPRI, Mirion Technologies - Canberra

11:00 AM **MAM-A.5**
MILDOS v4.2, Development Update
Biwer B, Sun C
Argonne National Laboratory, U.S. Nuclear Regulatory Commission

11:15 AM **MAM-A.7**
A Study of Indoor Radon Thoron and their Progeny Concentration Measurement in Mizoram India
Chhangte LZ, Pachuau Z, Pachuau R, Bawitlung Z, Sahoo BK, Sapra BK
Govt. Zirtiri Residential Science College, Mizoram University, Bhabha Atomic Research Centre

12:00 PM COMPLIMENTARY LUNCH
Sponsored by Mirion Technologies Exhibit Hall

10:00 AM – 11:45 AM **Grand Ballroom BC**

MAM-B
Emergency Planning/Response

Chairs: Sean M. Crawford, Gary Chen

10:00 AM **MAM-B.1**
Using RadResponder to Proliferate Federal Radiological Monitoring and Assessment Center (FRMAC) Lab Analysis Methodology
Crawford SM

10:15 AM **MAM-B.2**
Nuclear Power Plant Adoption of RadResponder: Where Are We Now?
Crawford SM

10:30 AM **MAM-B.3**
RadResponder: A Dose Tracking Solution for Multijurisdictional Response
Crawford SM

10:45 AM **MAM-B.4**
RadResponder Network – A Quick Walkthrough with the Newest Updates
Chen G
U.S. Environmental Protection Agency

11:00 AM **MAM-B.5**
Overview of International Commission on Radiation Units and Measurements Report 92, Radiation Monitoring for Protection of the Public after Major Releases of Radionuclides to the Environment
Tupin EA
Consultant

11:15 AM **MAM-B.6**
Nuclear Accident Simulation Study: Impact of 2017 Protective Action Guides on State Emergency Response
McMahon MD, Chancellor J
Louisiana State University Baton Rouge, Louisiana Department of Environmental Quality LSU

11:30 AM **MAM-B.7**
Temporally and Spatially Dependent Prediction of Dose to Population Monitoring Staff Following Improvised Nuclear Device Detonation
Samuels CE, Ansari AJ, Finklea LR, Hertel NE
Oak Ridge National Laboratory, Centers for Disease Control and Prevention, Georgia Institute of Technology

12:00 PM COMPLIMENTARY LUNCH
Sponsored by Mirion Technologies Exhibit Hall

1:00 PM – 2:00 PM **Grand Ballroom D-H**

P-Mon
Poster Session

P.1 Modelling Energy Deposition in Silica and Carbonate Sands Using MCNP
Graham HR, Waller EJ
The University of Ontario Institute of Technology

P.3 Comparison of Age-Specific Dose Rate Coefficients in Federal Guidance Report No. 15
Stuenkel DO, Boyd MA
U.S. Environmental Protection Agency

P.4 Development of a Ga2O3-based Fast Neutron Imaging and Spectroscopic System
Hunter SD, Demaree JD, Guardala N
NASA GSFC, ARL APG, George Washington University

P.5 State of Radiation Protection Practice by Radiologic Technologists at Saudi Pediatric Hospitals
Almashhki A

P.6 Iso-center Shift Results in Increases Patient Dose Indices in Pediatric Computed Tomography
Silvestrini E, O'Connell WJ
Northwell Health

2:00 PM – 5:00 PM **Grand Ballroom A**

MPM-A
Medical Health Physics Special Session – Fluoroscopy Operators Credentialing & Privileging

Chairs: Ray Dielman, Bryan Lemieux

2:00 PM **MPM-A.1**
Radiation Protection in Interventional Fluoroscopy: A Continuing Story
Miller DL
U.S. Food and Drug Administration

2:30 PM **MPM-A.2**
Fluoroscopy Training: Content
Balter S
Columbia University

2:45 PM **MPM-A.3**
Lessons Designing and Implementing a Fluoroscopy Training Program
Caracappa PF
Columbia University

3:00 PM COFFEE BREAK
Exhibit Hall

3:30 PM **MPM-A.4**
Physician Credentialing in Fluoroscopy — Is There a "BEST" approach?
Thomas J
Ascension Via Christi Hospital

4:00 PM **MPM-A.5**
Current Status of the Joint Commission Fluoroscopy Standards in an Acute General Hospital
Dielman R
MHP Consultant

4:15 PM **MPM-A.6**
Discussion
Augusto Prichard IC

2:00 PM – 3:30 PM **Grand Ballroom BC**

MPM-B
NRC Special Session 1 – Decommissioning Lessons Learned
Chair: Bruce Watson

2:00 PM **MPM-B.1**
Overview of the U.S. NRC Reactor Decommissioning Program Challenges and Issues
Watson BA
NRC

2:15 PM **MPM-B.2**
Lessons Learned on the La Crosse Boiling Water Reactor Decommissioning Project
Giebel SJ, Doell M, Fedors R, Parks L, Quintero J, Watson B
NRC

2:30 PM **MPM-B.3**
Humboldt Bay Power Plant Unit 3 Lessons Learned
Clements J, Evans R, Hickman J, Watson B
NRC

2:45 PM **MPM-B.4**
Zion Nuclear Power Station Lessons Learned
Clements J, Edwards R, Lin B, Hickman J, Watson B
NRC

3:00 PM **MPM-B.5**
Hematite Decommissioning Lessons Learned: A Regulatory Perspective
Chapman G, Smith J, LaFranzo M, Parks L, Guo L, Koenick S
NRC

3:15 PM **MPM-B.6**
GE Vallecitos Nuclear Center Radiological Surveys
Huffert A, Anderson S, Steely C, Parrott J, Watson B
NRC

3:30 PM COFFEE BREAK
Exhibit Hall

3:00 PM – 5:00 PM **Forest Glen**

PEP M-1
Fundamentals of Alpha Spectroscopy for the Health Physicist
Maddigan C
ORTEC

3:00 PM – 5:00 PM **Glen Echo**

PEP M-3
Challenges Associated with the Management of Radiologically-Contaminated Wounds
Davis J, Davila A
ORAU-REAC/TS

4:00 PM – 5:15 PM **Grand Ballroom BC**

MPM-C
NRC Special Session 2 – NRC Decommissioning Guidance and Inspection Overview
Chair: Bruce Watson

4:00 PM **MPM-C.1**
U.S. NRC Reactor Decommissioning Regulations and Guidance Overview
Watson BA
NRC

4:15 PM **MPM-C.2**
Revision 3 of NUREG-1757, Volume 1, Consolidated Decommissioning Guidance
Giebel SJ, Carter T, LaFrenzo M, Kauffman L, Orlando D, Gross A, Kline K, Watson B
NRC

4:30 PM **MPM-C.3**
Development of NUREG-1757, Volume 2, Revision 2 (Consolidated Decommissioning Guidance: Characterization, Survey, and Determination of Radiological Criteria
Barr C, Clements J, Watson B, McKenney C*
NRC

4:45 PM **MPM-C.4**
Development of NUREG-1507, Revision 1 (Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions
Clements J, Huffert A, Watson B
NRC

5:00 PM **MPM-C.5**
Closing-Q&A
Watson B

5:00 PM – 6:30 PM **Exhibit Hall**

Exhibitor Reception
Join the exhibitors for food, a cash bar, and the latest in health physics equipment.

TUESDAY

7:00 AM – 8:00 AM — Ballroom A

CEL-2
Radiation Biology for Radiation Protection in Medicine
Held KD
National Council on Radiation Protection and Measurements (NCRP), Massachusetts General Hospital/Harvard Medical School

8:25 AM – 9:30 AM — Grand Ballroom BC

PL-2
Plenary Session #2

8:25 AM **PL-2.1**
Welcoming comments
Goldin E
HPS President

8:30 AM **PL-2.2**
Nuclear Industry Overview and Outlook
Korsnick M
NEI

9:00 AM **PL-2.3**
Overview of NCRP Activities (Emphasis on Radiation Protection in Medicine)
Miller D
PAC 4 Committee, FDA

9:30 AM COFFEE BREAK
Exhibit Hall

10:00 AM – 12:30 PM — Ballroom BC

TAM-A
NCRP Special Session 1 - Radiation Protection in Medicine: Safety-related Issues
Chairs: Kathy Held, Jerrold Bushberg

10:00 AM **TAM-A.1**
Gonadal Shielding During Abdominal and Pelvic Radiography
Strauss KJ, Gingold EL, Frush DP
University of Cincinnati School of Medicine, Thomas Jefferson University, Stanford University School of Medicine

10:25 AM **TAM-A.2**
Patient Radiation Management in Interventional Fluoroscopy
Balter S
Columbia University

10:50 AM **TAM-A.3**
NCRP Report No. 177: Radiation Protection in Dentistry and Oral & Maxillofacial Radiology
Lurie AG
University of Connecticut School of Dental Medicine

11:15 AM **TAM-A.4**
Program Components for Error Prevention in Radiation Therapy
Sutlief SG
Banner MD Anderson Cancer Center

11:40 AM **TAM-A.5**
The Role of the Conference of Radiation Control Program Directors and State Radiation Control Programs in Radiation Protection in Medicine
Bruedigan LR, Winston JP

12:05 PM **TAM-A.6**
Evaluating and Communicating Radiation Risks for Studies Involving Human Subjects: Guidance for Researchers and Institutional Review Boards
Timins JK
NCRP

10:00 AM – 12:00 PM — Ballroom A

TAM-B
Operational Health Physics and Current Events
Chairs: Michael Lewandowski, Edward Tupin

10:00 AM **TAM-B.1**
A Health Physics Perspective on Prevention Through Design – Modernization of a World-Class Radiation Physics Facility
Mejias M
NIST

10:15 AM **TAM-B.2**
The Value of a Health Physicist to Industrial Radiation Safety
Lewandowski MA
3M

10:30 AM **TAM-B.3**
Exemption from 10 CFR 71.5 for Relocation of a Radioactive Material Quantity of Concern
Rubin WM
National Institutes of Health

10:45 AM **TAM-B.4**
The N.S. Savannah from Crown Jewel of the Atoms for Peace Program to Decommissioning Project
Tupin EA
Consultant

11:00 AM **TAM-B.5**
Integrated Model for Internal Radiation Field in an LEO Vehicle
Zimmerman CA, Chancellor JC
Louisiana State University, University of Texas Medical Branch

11:15 AM **TAM-B.6**
Neutrons in Internal Dosimetry: Is Spontaneous Fission All There Is?
Hertel NE, Samuels C, Eckerman K
Georgia Tech, ORNL Center for Radiation Protection Knowledge

11:30 AM **TAM-B.7**
Challenges Associated with the Management of Radiologically-Contaminated Wounds
Davis J
ORAU

11:45 AM **TAM-B.8**
Status of the Science Support Committee
Krieger K
Science support Committee

12:00 PM COMPLIMENTARY LUNCH
Exhibit Hall

12:15 PM – 2:15 PM Forest Glen

PEP T-1
Gamma Spectroscopy for the Health Physicist
Maddigan C
ORTEC

12:15 PM – 2:15 PM White Oak B

PEP T-2
Introducing New Radionuclides to a Nuclear Medicine Facility: Lessons Learned
Kelley SW

12:15 PM – 2:15 PM White Flint Ampitheatre

PEP T-3
The Case Against LNT
Fellman A
NV5 Dade Moeller

1:00 PM – 2:00 PM Grand Ballroom D-H

P-Tue
Poster Session
See P-Mon Poster Session for poster listing

2:00 PM – 5:15 PM Ballroom BC

TPM-A
NCRP Special Session 2 – Radiation Protection in Medicine: Doses, Dosimetry and Low Dose Considerations
Chairs: Kathy Held, Donald Miller

2:00 PM **TPM-A.1**
Radiological Health at FDA: A Review of Programs and Findings, Past and Present
Spelic DC
Food and Drug Administration

2:25 PM **TPM-A.2**
NCRP SC4-9 Report on Medical Radiation Exposure of Patients in the United States
Mahesh M, Mettler FA, Vetter R, Miller DL, Frush DP, Bhargavan Chatfield M, Royal HD, Milano MT, Spelic DC, Elee JG, Ansari A, Bolch W, Guebrt G, Sherrier R, Chambers C
Johns Hopkins University, University of New Mexico, US Food and Drug Administration, Stanford University Medical School, American College of Radiology, Washington University, University of Rochester Medical Center, Louisiana Dept of Environmental Quality

2:50 PM **TPM-A.3**
Estimating Lung Doses to Medical Workers in the Million Person Study (NCRP SC 6-11)
*Grogan H, Dauer L, Boice J, Yoder C**
Cascade Scientific, Memorial Sloan Kettering, NCRP

3:15 PM COFFEE BREAK
Exhibit Hall

3:45 PM **TPM-A.4**
Evaluation of Sex-Specific Differences in Lung Cancer Radiation Risks and Recommendations for Use in Transfer and Projection Models (NCRP SC 1-27)
*Weil MM, Boice J, Dauer L**
Colorado State University, NCRP, Memorial Sloan Kettering

4:10 PM **TPM-A.5**
Radiation Risk Communication in Medicine
Shogren A
US EPA

4:35 PM **TPM-A.6**
The ICRP and its Role in Guidance, Communication, and Collaboration
Applegate K

5:00 PM **TPM-A.7**
Discussion

2:00 PM – 2:45 PM Ballroom A

TPM-B
Instrumentation
Chairs: Carolyn MacKenzie, Frazier Bronson

2:00 PM **TPM-B.1**
Detector Characterization for Neutron Flux Mapping of the Maryland University Training Reactor
Johnson AS, Gilde LT, Case EQ, Delawie FD, Hand ST, Jacobson AD, Muldoon RM, Nuquist C, Koeth TW*
University of Maryland, College Park

2:15 PM **TPM-B.2**
Applications Using Continuous Sequential Repeating Quantitative Gamma Spectral Acquisition and Analysis
Bronson F
Mirion Technologies - Canberra

2:30 PM **TPM-B.3**
Imaging Special Nuclear Material by Luminescence Dosimetry
O'Mara RP, Hayes RB
North Carolina State University

2:45 PM COFFEE BREAK
Exhibit Hall

3:15 PM – 4:30 PM Ballroom A

TPM-C
Military Health Physics
Chairs: Jama VanHorne-Sealy, William Blakely

3:15 PM **TPM-C.1**
Army Reactor Program: Past, Present, and Future
VanHorne-Sealy JD

3:30 PM **TPM-C.2**
Armed Forces Radiobiology Research Institute Reactor Console Licensing Status
Divis JA, Molgaard JJ
Armed Forces Radiobiology Research Institute, Uniformed Services University of the Health Sciences

3:45 PM **TPM-C.4**
Dicentric Chromosome Aberration Assay Triage Scoring Performance Demonstration by the Armed Forces Radiobiology Research Institute's Cytogenetic Biodosimetry Laboratory — Annual Exercises
*Kulkarni R, Subramanian U, Romanyukha L, Wilkins RC, Bolduc DL, Blakely WF**
AFRRI/USUHS, Health Canada

4:00 PM **TPM-C.5**
Health Physics Considerations for Testing of the Army Solid State Active Denial Technology
Marcy BS, Mikulski HT, Frey CJJ, Alston MKD, Adams CL, Lamoreaux RW, Colville FT*
U.S. Army

4:15 PM **TPM-C.6**
Medical Effects of Ionizing Radiation Training Update: 2019 Guam Experience
Senchak L, Clasp T, Tuoch N, Barrera C, Woodruff C, Wand R, Schauer D, Gilstad J, Skinner W
Armed Forces Radiobiology Research Institute, Uniformed Services University of the Health Sciences, Defense Threat Reduction Agency

WEDNESDAY

7:00 AM – 8:00 AM **Ballroom A**

CEL-3
Industrial Radiation Safety – Opportunities for Health Physicists
Lewandowski M
3M

8:25 AM – 9:30 AM **Grand Ballroom BC**

PL-3
Plenary Session #3

8:25 AM **PL-3.1**
Welcoming comments
Goldin E
HPS President

8:30 AM **PL-3.2**
Innovations in Disposal of High Level Nuclear Waste
Baltzer R
Deep Isolation

9:30 AM COFFEE BREAK
Ballroom Foyer

10:00 AM – 11:30 AM **Grand Ballroom A**

WAM-A
Medical Health Physics
Chairs: Matthew Arno, Teresa Fisher

10:00 AM **WAM-A.1**
Mechanisms Underlying Electromagnetic Interference To Cardiovascular Implantable Electrical Devices
Dopart PJ, Cotts BR
Exponent

10:15 AM **WAM-A.2**
Pubic Dose Assessment from Canine Treatment with Sn-117m
Arno MG, Smith C, Donecker JM, Stevenson NR
Foxfire Scientific, FX Masse, Exubrion Therapeutics

10:30 AM **WAM-A.3**
Health Physics Analysis of Cs-131 Mesh Implants for Colorectal Cancer – An Update
Chang LA, Patel P, Alvarez H, Quan EM, Farach AM
Houston Methodist Hospital

10:45 AM **WAM-A.4**
First in U.S. Clinical Administration of Th-227
Fisher T
National Institutes of Health

11:00 AM **WAM-A.5**
Understanding the Measurement of Th-227 Activity in Targeted Alpha-Emitting Radiotherapy Using a Dose Calibrator
Munger EJ, Maass-Moreno R
NIH

11:15 AM **WAM-A.6**
The Potentials Of EXPLORER For Low Dose, Total Body PET/CT Imaging
Kroger LA, Cherry SR, Badawi RD
UC Davis

12:00 PM LUNCH ON YOUR OWN

10:00 AM – 11:50 AM **Grand Ballroom BC**

WAM-B
HPS Government Relations Special Session- What Would You Like the HPS Government Relations Program to Do for You?
Chairs: Craig Little, David Connolly

10:00 AM **WAM-B.1**
The HPS Government Relations Program: Connecting Members with Agencies and Congress
Little CA
HPS

10:20 AM **WAM-B.2**
What Can the HPS Government Relations Program Do For You?
Connolly D

10:50 AM **WAM-B.3**
HPS Government Relations Committee
Ring J
Beth Israel Deaconess Med

11:20 PM **TPM-A.7**
Discussion

12:00 PM LUNCH ON YOUR OWN

2:00 PM – 3:00 PM **Grand Ballroom A**

WPM-A
Risk Analysis
Chairs: Jessica Wieder, Betsy Wier

2:00 PM **WPM-A.1**
Let's Talk about Risk and Reasonableness
Wieder JS

2:15 PM **WPM-A.2**
Perception of Risk from Abandoned Uranium Mines in the Sweetwater Chapter of the Navajo Nation
Wier BA, Charley PA, Johnson TE, John G
Colorado State University

2:30 PM **WPM-A.3**
The Process for Fostering Community Engagement in Situations of Actual and Perceived Risks from Uranium Mining
Wier BA, Charley PA
Colorado State University

2:45 PM **WPM-A.4**
A Pilot Study to Examine Uranium and Arsenic in Livestock near Abandoned Uranium Mines in the Sweetwater Chapter of the Navajo Nation
Charley PA, Wier BA, Johnson TE, Gilbert J
Colorado State University

3:00 PM COFFEE BREAK
Ballroom Foyer

2:00 PM – 4:15 PM **Grand Ballroom BC**

WPM-B
Regulatory/Legal Issues
Chair: Ray Johnson

2:00 PM **WPM-B.1**
Does Residential Radon Actually Cause Lung Cancer?
Fellman AL
NV5 Dade Moeller

2:15 PM **WPM-B.2**
Exempt Quantities of Alpha Radionuclides
Ribaudo C
National Institutes of Health

2:30 PM **WPM-B.3**
The National Materials Program – A 21st Century Federal-State Partnership
White AD, Cox WL
U.S. Nuclear Regulatory Commission, North Carolina Department of Health and Human Services

2:45 PM **WPM-B.4**
Update of the Department of Energy Standard STD-1196-2011, Derived Concentration Technical Standard
Corredor CE, Leggett RW, Eckerman KF, Samuels CE, Jokisch DW, Wallo A, Favret DJ
Department of Energy, Center for Radiation Protection Knowledge, Francis Marion University

3:00 PM COFFEE BREAK
Ballroom Foyer

3:30 PM **WPM-B.5**
Radiation Litigation, Part I – Understanding the Legal Concepts
Johnson RH
Radiation Safety Counseling Institute

3:45 PM **WPM-B.6**
Radiation Litigation, Part II – Preparation as an Expert or Fact Witness
Johnson RH
Radiation Safety Counseling Institute

4:00 PM **WPM-B.7**
Radiation Litigation, Part III – Avoiding Litigation by Good Risk Communications
Johnson RH
Radiation Safety Counseling Institute

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Chad Gunther / COO, Quality Assurance Director

- 7 years of experience involving the irradiator industry

AAHP Course #1

8:00 AM – 5:00 PM

Radiation Risk Assessment

Stuart Walker, Fred Dolislager

Location: Glen Echo

Radiation Risk Assessment is a full-day advanced course that focuses on specific technical and regulatory issues that Remedial Project Managers (RPMs) and On-Scene Coordinators (OSCs) address when managing Superfund sites that have a risk assessment conducted for radioactive contaminants. By taking the course, participants achieve the following objectives:

- Learn a step-by-step approach to the Superfund remedial program's risk assessment process for radioactive contamination.
- Explore methods for conducting site-specific risk assessments.
- Discover practical recommendations for improving the radiation risk assessments conducted at your site.
- Master information about radiation risk assessment process.

The instructional methodology for this course includes lectures and demonstrations of using EPA's risk and dose assessment calculators developed by the Superfund remedial program. The target audience for this course is RPMs, OSCs, risk assessors and others that want to obtain a working knowledge on conducting Superfund radiation risk assessments.

AAHP Course #2

8:00 AM – 5:00 PM

Radiological Operations Support Specialist (ROSS) Continuing Education Training

Brook Buddemeier, CHP, Dr. Bill Irwin, CHP, Angela Leek, Matt McKinley, Jeff Semancik, Adela Salame-Alfie; Lawrence Livermore National Laboratory, DOE, Vermont DOH, Iowa DPH, Kentucky DPH, Connecticut DEEP, Center for Disease Control and Prevention

Location: Forest Glen

This 8-hour Radiological Operations Support Specialist (ROSS) continuing education training is designed to provide new guidance and experiential learning opportunities on targeted topics and tools. It is designed to provide beneficial updates and continuing education for health physicists who have attended a previous ROSS training course, including FEMA MGT 455 Radiological Operations Support Specialist. It will also benefit health physicists and radiation protection personnel with interests in becoming a ROSS and anyone engaged in or interested in radiological and nuclear emergency preparedness.

Topics include:

- Updates on ROSS National Qualification System typing, the ROSS position task book and OneResponder for qualifying ROSS;
- A review of ROSS experiences in exercises around the nation;
- Demonstration of emergency responder training videos depicting the ten tactics of the Department of Homeland Security (DHS) National Urban Security and Technology Laboratory (NUSTL) Radiological Dispersal Device (RDD) Response Guidance which can be used in training by ROSS;
- Ten-point monitoring, RDD and shape file overlays for situational awareness in RadResponder;
- Experiential learning using the ROSS Toolkit on RadResponder to generate briefing products for perimeters & zones, worker safety, shelter & evacuation, population monitoring and recovery;
- Introduction to the ROSS Emergency Operations Center Job Aid.

A word about the ROSS Toolkit: It is a web-based collection of national and international guidance organized for quick reference by a ROSS or other radiation professional to quickly guide recommendations or decisions for radiation control perimeters, radiation dose decision points, personnel contamination screening levels, shelter and evacuation guidance, as well as provides fact sheets and other resources for nuclear power plant, RDD and nuclear detonation emergencies. Instructors will demonstrate how to access the ROSS Toolkit through RadResponder and review the structure of the various guidance topics within the Toolkit. Students will be provided an assignment requiring review of guidance in the Toolkit, and they will present a briefing on their recommendations based on the Toolkit guidance.

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PROFESSIONAL ENRICHMENT PROGRAM (PEP)

Sunday 26 January 2020 • Bethesda North Marriott Hotel & Conference Center

Sunday 8:00 AM – 10:00 AM

1-A Health Physics Considerations for Production of PET Radionuclides for Radiopharmaceutical and Research Uses

Roger Moroney, PETNET/Siemens

Location: Glen Echo

The use of Positron Emission Tomography, or PET, has expanded rapidly in the last few years, and is projected to continue to increase in volume each year as physicians and patients become more aware of PET's diagnostic capabilities. All PET radionuclide production starts with an accelerator. Most of the accelerators in use for this purpose are small cyclotrons with maximum proton energy of less than 20 MeV. These cyclotrons may be self-shielded or use a bunker. The prompt radiation fields around these cyclotrons include high energy photons and neutrons with the magnitude of the field depending on the radionuclide being produced, the particle type and energy, and the beam current. Secondary radiation fields arise from the desired PET radionuclide produced as well as from activation products. PET radionuclides produce two 511 keV photons per positron, which requires much thicker shielding than for the traditional nuclear medicine radionuclides during production, research and transport in order to manage personnel exposures. Activation products present in the target and surrounding areas create external radiation fields during maintenance activities and must be managed to keep exposures low to personnel maintaining the cyclotron. Production of some radionuclides and radiopharmaceuticals lead to airborne effluents that may require control and/or monitoring to demonstrate compliance with regulations. Good facility design is critical to ensuring adherence to regulations as well as to improve operational efficiencies that will lead to lower radiation exposures to staff. The combination of these items leads to a dynamic and complex radiological environment that provides a good challenge to today's Health Physicists.

1-B Nuclear Criticality Safety Overview

Robert Bruce Hayes, North Carolina State University

Location: Forest Glen

This PEP will review the basic neutronics and reactor related concepts sufficient to understand nuclear criticality enabling an understanding in compliant applications for nuclear waste management and facility operations. This will include the 6 factor formula for k_{eff}, which requires an understanding of cross sections, reaction rates, moderation and fission. When these basic reactor physics concepts are covered, applications in controlling the various parameters which can limit criticality events are then summarized based on ANS/ANSI 8.1 and related drivers are reviewed. From this, applications ranging from spent fuel and transuranic waste shipment and disposal are covered culminating in novel research concepts in nuclear criticality safety.

Sunday 10:30 AM – 12:30 PM

2-A Review and Update on Radiation Effects on Germ Cells, the Embryo/Fetus and on Infants

Cari Borras, Radiological Physics and Health Services

Location: Glen Echo

After a short radiobiology introduction, the PEP course will focus on stochastic and deterministic radiation effects on the gonads and the uterus prior and after conception. The effects of in utero irradiation should not be confused with the heritable effects that can be manifested by irradiating germ cells (ovules or sperm cells) before conception, which are always stochastic. Irradiation of somatic cells of the embryo/fetus can cause: embryonic death, which can happen in the period of pre-implantation at doses above 100 mGy; malformations, which can occur during organogenesis with a threshold dose of 200 mGy, and severe mental retardation (decrease of 30 IQ), which can appear 8-15 weeks after conception with a threshold of 500 mGy. It is important to note that the spontaneous incidence of these effects is, respectively, 1 in 17, 1 in 200 and 1 in 1,000 unirradiated embryos or fetuses. Old and new epidemiological data from large in utero exposed cohorts in Hiroshima and Nagasaki, Chernobyl and the Southern Urals (Mayak Plant and Techa River) will be presented. Recent epidemiological studies on radiation effects on children, highlighting their different tissue radiosensitivities, will also be examined. The impact of these findings on therapeutic and medical imaging procedures will be explored. The course will end with considerations on international radiation safety recommendations and the role of the health physicist, especially the medical health physicist, in these areas.

2-B Radiological Safety Challenges Associated with Operating Non-Medical X-Ray Devices

Carl A. Tarantino

Location: Forest Glen

A wide spectrum of non-medical x-ray units are used in a myriad of research, university, government, and private company environments. The large number and variety of these units used in the field present unique radiological safety challenges to the operator and organization responsible for ensuring applicable federal, state, and local requirements are met. While providing information on the different types of non-medical x-ray devices and their uses, this PEP will review the governing requirements for the safe use, operation, and inspection of these units. Revisions of regulations, staff changes, training, manufacturer certifications, procedures, equipment mods/upgrades and repairs will be discussed as contributors to radiological safety concerns, which can lead to overexposure incidents. Differences in compliance requirements based on the type of non-medical x-ray generating devices, how they are being used, and whether the unit is classified as permanent or temporary, will be discussed. In addition to regulatory controls, the latest NCRP recommendations for the safe use of non-medical x-ray units in educational institutions will be shared.

2-C Contemporary Topics Affecting Radiation Safety Program Operations: Session 1

Robert Emery, Janet Gutierrez, The University of Texas Health Science Center at Houston

Location: Brookside B

The practice of radiation safety is actually the convergence of a variety of professional disciplines, thus changes and developments that affect the field can emerge from a variety of sources. This PEP is designed to address two contemporary issues confronting radiation safety program operations::

1. The promise and peril of "citizen science"
2. Anticipating and adapting to change within your organization

Detailed descriptions of each presentation are listed below. Ample time will be allotted for participant questions and discussion. The particular topics included in the PEP series have been recently identified as extraordinarily useful to participants in the highly successful week-long "University of Texas EH&S Academy"

The Promise and Peril of "Citizen Science" – and Why This Matters to Radiation Safety

The proliferation of personal electronic devices has resulted in an exponential expansion in the ability to rapidly gather and disseminate information – some accurate, some not so accurate, and some downright wrong. With virtually every member of the workforce and community now equipped with this technology, the notion of "citizen science" has expanded, wherein citizens and employees can collect and instantly transmit data and information about exposures and situations. While this technique holds great promise as a "force multiplier" to address various concerns, the technique is largely unfiltered and can result in the dissemination of misinformation, apprehension, and confusion. This presentation will discuss the evolution of "citizen science" and how it has changed with recent technological developments and then will provide a series of suggested steps for radiation safety programs to take to proactively address the challenge.

Strategies for Keeping Your Radiation Safety Program on Course in a Sea of Constant Change

The University of Texas School of Public Health recently conducted a straw poll of approximately fifty very experienced health & safety professionals and the results were astonishing: 80% had reported to the person they current report to for a period of less than 5 years, and 25% for a period of less than 1 year! These striking results underscore the old adage that "change is constant". But adapting to change is not something that is traditionally addressed in academic health & safety programs. Interestingly, although change is indeed constant, the underlying data that drives radiation safety programs doesn't change. What does change is the framing of the delivery of this important information to ensure continued program support. This presentation will discuss the dilemma of constant change and provide some tips on the personal management of change and will present options to consider for communicating essential information to the ever-changing environment.

Sunday 2:00 PM – 4:00 PM

3-B Thorium Molten Salt Reactors: Key Radiation Protection Challenges

Casper Sun, USNRC

Location: Forest Glen

Join this lecture for an overview of thorium molten salt reactors (TMSR) and their radiation safety requirements. The potential of molten salt reactor designs and associated technologies have captivated the attention of our nuclear energy industry. Key benefits include fuel economy and flexibility—the ability to burn spent fuels, thorium, uranium-238 and plutonium—as well as non-water, carbon-free, and the reduction or minimizing of radiological and environmental impacts from unintended releases and undesirable waste, both during normal operations and in case of emergency. As Richard Martine noted

in MIT Technology Review (2016), "...cheaper and cleaner nuclear plants could finally become a reality...the technology was invented more than 50 years ago." Current advances in high-temperature industries and materials have led to safety designs of TMSR upgraded. Tomorrow's nuclear reactors are closer than you think! Thorium fuel cycle could be the most promising option for them; but there's work to be done—as R. K. Sinha wisely put it: "Thorium is like wet woods." We'll review the simple reactor physics, chemical engineering, and major health physics considerations around TMSR, including the neutronic power, fission products and fuel-salt separations, tritium and noble gas control, the fuel-breeding conditions and radiation sources and shielding, in the core. Lastly, you'll get a quick look at things to come, such as drone inspectors and robotic radiation workers, and digital I&C systems for operating our advanced nuclear reactors.

3-C Contemporary Topics Affecting Radiation Safety Program Operations: Session 2

Robert Emery, Janet Gutierrez, The University of Texas Health Science Center at Houston

Location: Brookside B

The practice of radiation safety is actually the convergence of a variety of professional disciplines, thus changes and developments that affect the field can emerge from a variety of sources. This PEP is designed to address two contemporary issues confronting radiation safety program operations:

3. A radiation protection program logic model: considering inputs, outcomes and benchmarking opportunities
4. Radiation protection measures and metrics that matter (and how to display them)

Detailed descriptions of each presentation are listed below. Ample time will be allotted for participant questions and discussion. The particular topics included in the PEP series have been recently identified as extraordinarily useful to participants in the highly successful week-long "University of Texas EH&S Academy"

A Radiation Protection Program Logic Model: Inputs, Outcomes and Benchmarking Opportunities

Successful radiation protection programs function largely in the realm of prevention, thus making it difficult to explain to upper management and others the amount of resources needed to "make nothing happen". One possible solution to this conundrum resides in the field of public health where logic models are often used to assess program "inputs" and program "outcomes". This session will examine radiation protection programs from the perspective of a public health logic model and serve as the basis for a discussion about what sorts of valid benchmarking might be able to be accomplished within the radiation safety profession.

Radiation Protection Measures and Metrics That Matter (and How to Display Them)

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

Monday 3:00 PM – 5:00 PM

M-1 Fundamentals of Alpha Spectroscopy for the Health Physicist

Craig Maddigan, ORTEC

Location: Forest Glen

This workshop will instruct one on the basics of Alpha Spectrometry and include a refresher on the concepts of the basic physics of radiation measurement along with a discussion of the chemistry and measurement processes involved in quantifying alpha emitting isotopes in various samples/matrices.

M-3 Challenges associated with the management of radiologically-contaminated wounds

Jason Davis, Anthony Davila, ORAU-REAC/TS

Location: Glen Echo

Radiologically-contaminated wounds are relatively rare events, which limits the number of healthcare and health physics professionals with experience in handling these cases. General principles and biokinetic models are available through NCRP and ICRP publications, which provide a basic framework for response, but lack details sought by operational health physicists and medical professionals in dealing with specific cases. This Professional Enrichment Program addresses practical

aspects of evaluating the extent of contamination, determining appropriate therapeutic actions based on extent and type of contamination, follow-up monitoring, evaluation of therapy effectiveness, and the equivalent or effective dose associated with the wound. Cases involving contaminated injuries involving fission-activation products and transuranic radionuclides are discussed to emphasize the unique aspects of the care and treatment of contaminated wounds.

Tuesday 12:15 PM – 2:15 PM

T-1 Gamma Spectroscopy for the Health Physicist

Craig Maddigan, ORTEC

Location: Forest Glen

This workshop will instruct one on the basics of Gamma Ray Spectrometry and include a refresher on the concepts of the basic physics of radiation measurement along with a discussion of the collection and evaluation of spectra. Spectral features and the challenges of identifying and quantifying gamma emitting radioisotopes in various samples/matrices.

T-2 Introducing New Radionuclides to a Nuclear Medicine Facility: Lessons Learned

Shaun W. Kelley

Location: White Oak B

Nuclear medicine has relied heavily on the same small group of radionuclides for many years, these include Tc-99m, Tl-201, I-131 and a handful of others. However, the Nuclear Medicine industry has a projected Compounded Annual Growth Rate (CAGR) of 10% that includes not just the growth of these existing products but also the development of new products and new radionuclides for both diagnosis and therapy of leading causes of death, including heart disease and various forms of cancer. Many of these products have already been introduced to market and are seeing continued growth (Lu-177, Ge-68/Ga-68, Ra-223, etc.) while more are in development. These new products often come with new challenges due to different radiological properties (longer half-life, more energetic emissions, alphas, etc.) and/or different regulatory challenges. This talk will help attendees avoid some common mistakes made when introducing new products based on lessons learned at a major nuclear medicine manufacturing site. Topics covered include but are not limited to: ventilation, effluent and area monitoring, internal and external dosimetry, surveying, shipping and emergency response.

T-3 The Case Against LNT

Alan Fellman, NV5 Dade Moeller

Location: White Flint Ampitheatre

Radiation safety programs must establish compliance with radiation regulations which continue to be based on the linear no-threshold (LNT) hypothesis and the ALARA principle, despite overwhelming sound, peer-reviewed science that demonstrates the existence of a carcinogenic threshold and/or hormesis at low doses. LNT and ALARA insist that when we make changes that lower worker dose by as little as one µSv, we are making the workplace safer. Public health authorities and many radiation safety professionals have convinced most members of the public that when we evacuate 150,000 persons following Fukushima to keep them from receiving tens of mSv, we are improving public health despite the fact that this decision has resulted in more than 1,600 fatalities among evacuees. Yet despite compelling evidence revealing LNT to be fraudulent, the consistent response taken by regulatory agencies and scientific bodies whose recommendations are cited as the basis of regulatory actions is to deflect or rationalize away the science at best or simply pretend it doesn't exist at worst so as to maintain allegiance to a worldview of radiation safety built on ALARA and LNT. A sample of relevant findings supporting this allegation will be presented.

CONTINUING EDUCATION LECTURES

CELs take place in the Bethesda North Marriott Hotel & Conference Center

Monday 7:00 AM – 8:00 AM

CEL-1 Can We Talk?

Raymond Johnson, Radiation Safety Counseling Institute

Location: Ballroom A

Talking is such a natural function of our daily lives that we may give the process little thought. We learned to talk as infants to get our needs met and we continue to talk and interact with others for survival. We usually talk to gather or provide information. We may also talk to express our feelings. While communicating, however, how often do we think of talking as a two-way process? Effective communication involves not only effective speaking, but also effective listening.

Effective Speaking. While much of our speaking is to share information or respond to others, we also need to speak to get our needs met. We will consider the following questions in this CEL. Do we know how to speak up assertively without seeming aggressive or pushy? Do we know how to handle conflicts calmly and effectively? How do we give constructive criticism and achieve positive results? Do we know how to respond to criticism of our knowledge, motives, or integrity without getting defensive? How do we handle mistakes and misunderstandings that could damage relationships? What can we say, when we do not know what to say or what we think of saying may get us into trouble? Do we know how to give "I" messages?

Effective Listening. Would you agree that our approach to listening is primarily to hear the informational content or questions raised by others? While not stated explicitly many communications also include an emotional component or feeling. Hearing and responding to feelings and emotions is often one of the greatest communication challenges for health physicists. Fortunately, there is a relatively simple tool specifically intended to deal with feelings. It is called Active Listening and it may well be the most powerful communication skill available to health physicists. Dr. Thomas Gordon tells us how to use active listening when responding to difficult, especially emotional, communications by paraphrasing the content and the feeling expressed by other persons. Hearing and reflecting another person's feelings are a non-defensive approach that lets the other person know that we care. To identify feelings, it may be helpful to know that all feelings can be defined by a synonym of one of the following four words, "Mad, Sad, Glad, or Afraid." Furthermore, you do not have to get the feeling right in your initial response. If you miss the real feeling, the other person will correct you and the communication will proceed smoothly.

Tuesday 7:00 AM – 8:00 AM

CEL-2 Radiation Biology for Radiation Protection in Medicine

Kathryn D. Held, National Council on Radiation Protection and Measurements (NCRP), Massachusetts General Hospital/Harvard Medical School

Location: Ballroom A

A good understanding of basic radiation biology concepts and new information and research approaches is critical for understanding and applying radiation protection in medicine. In recent years there has been a plethora of new thoughts and data derived using "modern" molecular biology techniques that impact the application of biology knowledge to radiation protection approaches for patients and medical workers, particularly in the low dose and low dose rate arena. In addition to knowing "classic" concepts such as acute and delayed effects on irradiated normal tissues, sparing by low dose rates and radiation carcinogenesis, a medical and health physics practitioner should now be familiar with concepts such as bystander effects, genomic instability, DNA damage repair fundamentals, and genomics and proteomics. This lecture will provide an overview of important radiation biology fundamentals relevant to protecting patients and medical workers exposed to radiation, as well as an introduction to newer findings that could impact future approaches to protection. The lecture will complement the talks to be given in the NCRP Symposium on Radiation Protection in Medicine.

CEL Courses (Included in registration fee)

To download a CEL talk, use this link and type in the corresponding CEL Code:

http://burkinc.net/HPS2020MYPEP.php

CEL1-8816

CEL2-8961

CEL3-9859

Wednesday 7:00 AM – 8:00 AM

CEL-3 Industrial Radiation Safety – Opportunities for Health Physicists

Michael Lewandowski, 3M

Location: Ballroom A

Ionizing radiation emitting devices are widely used at industrial facilities. In most cases, radiation safety activities are performed by individuals who do not identify themselves as health physicists. Under what circumstances is this acceptable? How should health physicists be involved with radiation safety activities at industrial facilities? This lecture will present some typical uses of radiation in the industrial environment and the radiation safety challenges therein. The regulatory environment and typical requirements, including qualifications regarding personnel who perform those requirements will be discussed. Recommendations for health physicists interested in providing radiation safety expertise to industrial facilities will be given for specific situations. Specific tools will be discussed for practicing health physicists to engage with other environment, health and safety professionals to promote radiation safety. This lecture will focus on a subset of industrial facilities where radioactive materials and radiation generating machines are used to develop or manufacture consumer or industrial products. Please note, this lecture will not consider electric power generation or the manufacture and distribution of medical imaging machines.

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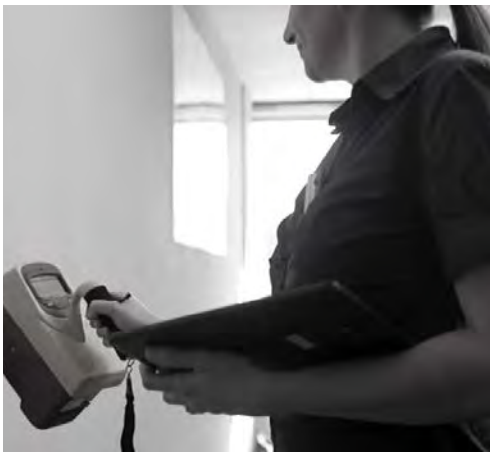

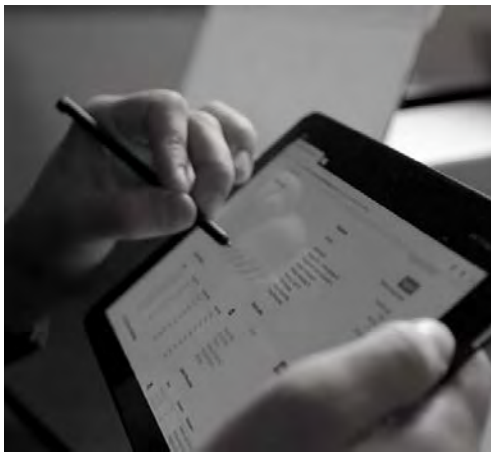

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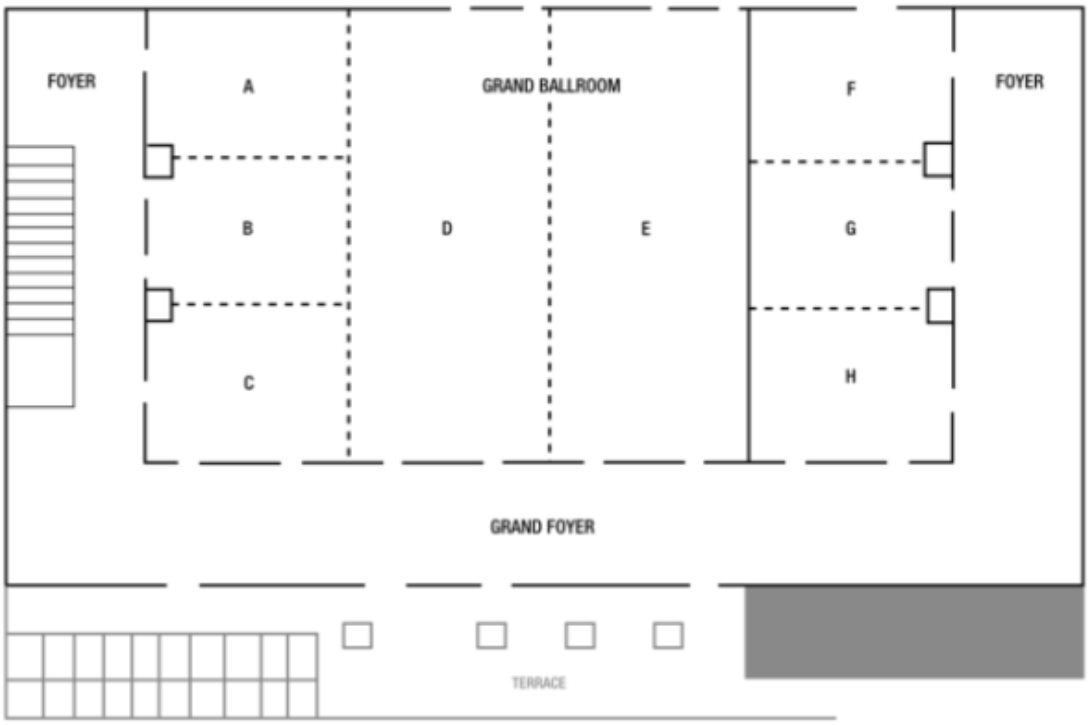

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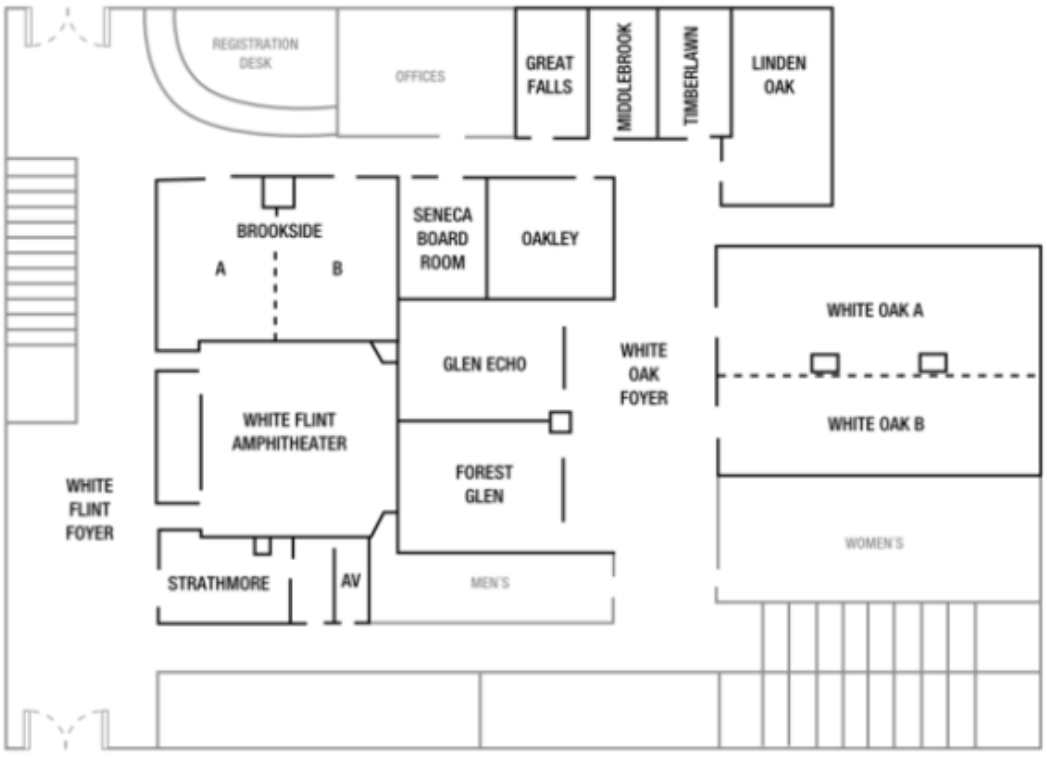

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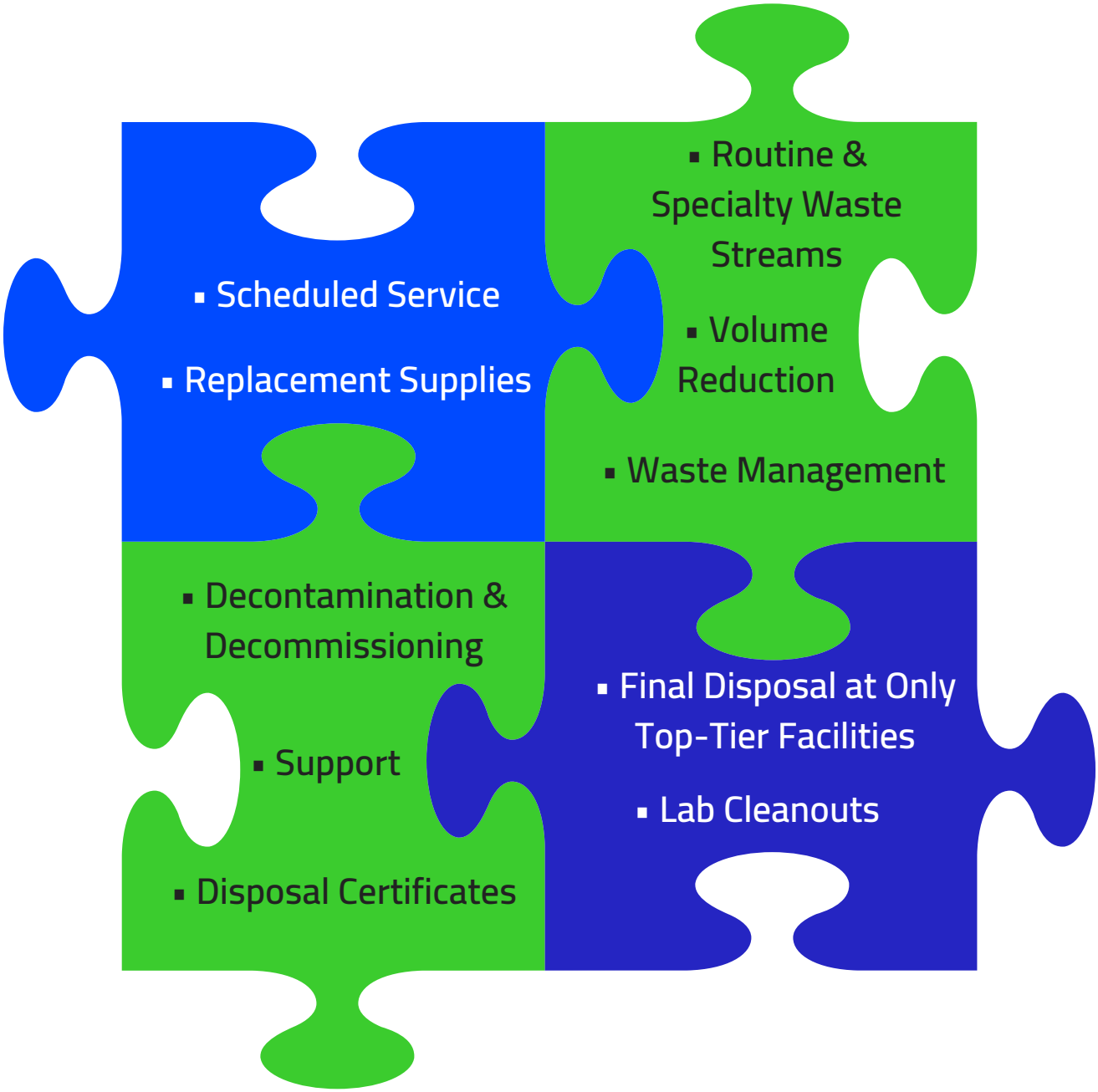

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