2021 Annual Meeting of the Baltimore-Washington Chapter of the Health Physics Society

Agenda and Presenter Information

7 May 2021

Time Period	Presenter	Activity or Presentation
0830-0900	Registration	
0900-1000	Jeff Chapman, President, and XCOMM	Business Meeting
1000-1030	John Kotek, Nuclear Energy Institute	The Role of Nuclear Energy in our Future Energy System
1030-1100	Jason Flora and Douglas Minnema, Defense Nuclear Facilities Safety Board	Current Activities of the Defense Nuclear Facilities Safety Board (DNFSB)
1100-1130	Joe Rotunda, Rotunda Scientific	Active Eye Dose Dosimeter Design & Testing Results
1130-1200	Kathy McLellan, U.S. Department of Energy	BWCHPS's First Responder Training
1200-1230	Lunch	
1230-1300	William Blakely, Uniformed Services University of the Health Sciences	Early-Response Multiple-Parameter Biodosimetry
1300-1330	Charley Yu, Argonne National Laboratory	Experience and Lessons Learned from Participation in the IAEA Model Validation Programs
1330-1400	Brian Livingston, U.S. Army Public Health Center	Soil Screening Level Guidance for Radionuclides at Deployed Locations
1400-1430	Alan Fellman, NV5 Dade Moeller	The LNT Hypothesis is NOT Valid to Estimate Future Cancer Risk; What That Tells Us About ALARA
1430-1440	Closing	Jeff Chapman, President and Michael Wangler, President-Elect

Presentations will be about 20 minutes in length.

Q&A will be 5-10 minutes in length.

Presenter	Abstract and Biosketch
John Kotek, Nuclear Energy Institute	**Title: The Role of Nuclear Energy in our Future Energy System** **Abstract:** John Kotek will discuss developments in energy policy and nuclear energy technology. He will explain how nuclear energy fits into the decarbonization plans of U.S. utilities; will provide an overview of the types and status of next-generation reactors; will discuss ongoing efforts to demonstrate commercial-scale production of hydrogen and opportunities for nuclear as a source of industrial heat; and will explore the business and policy drivers that are raising interest in next-generation nuclear energy systems. **Biosketch:** John Kotek is Vice President for Policy and Public Affairs at the Nuclear Energy Institute. Prior to joining NEI, he served as Acting Assistant Secretary for Nuclear Energy in the US Department of Energy. From 2010-2012, John served as Staff Director to the Blue-Ribbon Commission on America's Nuclear Future. In 2002, John was the American Nuclear Society's Congressional Fellow. John began his career with the U.S. Department of Energy in 1989 and served as an R&D program manager at Argonne National Laboratory. He holds a BS in Nuclear Engineering from the University of Illinois and an MBA from the University of Maryland.
Jason Flora, Defense Nuclear Facilities Safety Board and Douglas Minnema, PhD, Defense Nuclear Facilities Safety Board	**Title: Current Activities of the Defense Nuclear Facilities Safety Board (DNFSB)** **Abstract:** Jason Flora will provide an overview of the Board, Department of Energy facilities impacted, legislation, Board's oversight duties, technical reviews, and areas of concern. Congress established the Board and charged it with identifying potential issues of adequate protection at defense nuclear facilities, advising the Secretary of Energy of those issues, and informing the public. **Biosketch:** Jason Flora has been a staff member with the DNFSB since October 2019. He was previously employed as a health physicist for the Department of Energy at the Waste Isolation Pilot Plant; Exelon Nuclear at Three Mile Island and Byron nuclear power facilities; 3M Company; National Institute for Occupational Safety and Health; and at Rocky Flats. Dr. Douglas Minnema has been a staff member with the DNFSB since 2006. Previously, he was a Radiological Scientist with the National Nuclear Security Administration; Radiological Scientist with the Environmental Safety and Health Department of the Department of Energy; Technical Staff Member with Sandia National Laboratories. In addition, he is the 2020 Joyce P. Davis Awardee from the American Academy of Health Physics.

Joe Rotunda, Rotunda Scientific	**Title: Active Eye Dose Dosimeter Design & Testing Results** **Abstract:** Eye dosimetry is becoming more of a concern since the publication of ICRP-103. Joe Rotunda will discuss the changes that have caused the increased concern for measuring Hp(3), lens of eye dose, the design of a new Hp(3) active dosimeter detector and the testing of the Hp(3) detector with the ED3 active extremity dosimeter. Design and test data from two different trials will be presented as well as design finalization. **Biosketch:** Joe Rotunda is a Partner at Rotunda Scientific Technologies, a global business that specializes in the areas of external dosimetry, radiation detection and spectroscopy. His involvement in the Nuclear & Radiation Measurement Industry started in 1990. Prior to May 2012, when Rotunda Scientific was founded, Joe was working at Thermo Fisher Scientific's radiation measurement business and prior owners. He worked both in the fields of R&D and Marketing / Product Management. Prior to 1990 he worked for a defense contractor on guidance systems and flight simulators utilizing his aeronautical engineering background. Representing the USA, he participates in the International Electrotechnical Commission (IEC) as well as ANSI writing technical standards for dosimetry and other related radiation detection systems. Joe also published/co-published over 35 papers in the fields of dosimetry and radiation measurement and is a co-holder of two patents in the field of dosimetry. He is presently working with different research organizations to take niche technology from the lab to the field.
Kathy McLellan, U.S. Department of Energy	**Title: BWCHPS's First Responder Assistance Training** **Abstract:** Kathy McLellan will discuss the Baltimore Washington Chapter First Responder Assistance Training program, which consists of Health Physicists who reside in the MD, DC, and VA region and who have volunteered their time to train first responders in response techniques for radioactive materials response. Certain volunteers are designated as Rovers meaning they will respond to wherever they are needed. All the Health Physicists have had training in emergency response and continue to receive the most up to date training available to teach first responders' techniques necessary to respond to incidents involving radioactive materials and minimizing exposure to any radioactive materials. **Biosketch:** Katharine began her health physics career as a DOE subcontractor. She transferred to the NIH where she worked as an operational and emergency response health physicist for over 23 years. She then accepted an opportunity at the Department of Energy, Office of Public Radiation Protection. While working in her current office, she participated in several Radiological Nuclear exercises for NNSA Office of Incident Response which led to a detail to NNSA as the ROSS Program

	Manager. She currently works in the DOE Office of Public Radiation Protection (AU-22) as a health physicist focusing on Biota, Transportation, Emergency Response and Exercises, and Institutional Controls.
William Blakely, Uniformed Services University of the Health Sciences	**Title: Early-Response Multiple-Parameter Biodosimetry** **Abstract:** The accepted generic multiparameter and early-response biodosimetry approach for suspected high-dose radiation (i.e., life-threatening) exposure includes measuring radioactivity associated with the exposed individual (if appropriate); observing and recording prodromal signs/symptoms; obtaining serial complete blood counts with white-blood-cell differential; sampling blood for the chromosome-aberration cytogenetic bioassay using the "gold standard" dicentric assay (premature chromosome condensation assay for exposures >5 Gy photon acute doses), measurement of proteomic biomarkers and gene expression assays for dose assessment; bioassay sampling, if appropriate, to determine radioactive internal contamination; physical dose reconstruction, and using other available opportunistic dosimetry approaches. Biodosimetry resources are identified and should be setup in advance along with agreements to access additional national, regional and international resources. This multifaceted capability needs to be integrated into a biodosimetry "concept of operations" for use in a radiological emergency. The combined use of traditional biological-, clinical-, and physical-dosimetry should be use in an integrated approach to provide: i) early-phase diagnostics to guide the development of initial medical-management strategy, and ii) intermediate and definitive assessment of radiation dose and injury. Use of early-phase i) clinical signs and symptoms, ii) blood chemistry biomarkers, and iii) triage cytogenetics shows diagnostic utility to predict acute radiation injury severity. **Biosketch:** Dr. Blakely received his PhD in 1980 at the University of Illinois-Urbana-Champaign in radiation biology; his doctoral advisor was Dr. Howard S. Ducoff. He completed his post-doctorate study on DNA radiation chemistry in Dr. John F. Ward's laboratory at the University of California, San Diego. In 1983 he joined the Armed Forces Radiobiology Research Institute (AFRRI) – Uniformed Services University of the Health Sciences (USUHS), his present affiliation. Dr. Blakely's research activities have focused on molecular mechanisms of radiation sensitivity, cell-cycle effects, DNA damage and repair, and biological dosimetry. He served as a guest editor for several issues of journals associated with international meetings, an associate editor for the Radiation Research journal, US delegate to NATO Research Task Groups in Radiobiology for ~20 years and Chairman of the NATO Research Study Group-Radiation Bioeffects and Countermeasures (RTG-033). He has also served as a US representative to the IAEA, ISO, and WHO Committees addressing harmonization of cytogenetic biodosimetry for dose assessment. He presently is the course director of the Radiation

	Biology graduate course at his University. He also serves as a U.S. representative on the ISO TC85/SC2 (Radiation Protection) Working Group (WG) 18 (Performance Criteria for Service Laboratories Performing Biological Dosimetry by Cytogenetics) and WG 25 (Radiological protection – Radiological monitoring for emergency workers and population following nuclear/radiological accidents – Part 1: General principles), 3rd 6-yr appointment as a Council Member for the National Council on Radiation Protection and Measurements (NCRP), an assistant professor in the USUHS Preventive Medicine and Biometrics Department, and an senior associate faculty at Radiation Emergency Assistance Center/Training Site (REAC/TS).
Charley Yu, Argonne National Laboratory	**Title: Experience and Lessons Learned from Participation in the IAEA Model Validation Programs** **Abstract:** For the past 30 years, the RESRAD family of codes has been applied in various model comparison and validation programs coordinated by the International Atomic Energy Agency (IAEA). While IAEA programs certainly benefited from application of the RESRAD models, the models also benefited, enabling developers to enhance model features and create databases such as the probabilistic analysis capability and transfer factors database. This paper presents some results from these model comparison/validation exercises. The following IAEA programs employed RESRAD models: VAMP (Validation of Model Predictions), BIOMOVS II (Biospheric Model Validation Study II), BIOMASS (Biosphere Modeling and Assessment), EMRAS I and II (Environmental Modeling for Radiation Safety I and II), and MODARIA I and II (Modeling and Data for Radiological Impact Assessment I and II). Among the RESRAD codes selected for use in these programs were RESRAD-ONSITE, RESRAD-OFFSITE, RESRAD-BUILD, RESRAD-RDD and RESRAD-BIOTA. The various scenarios developed for the IAEA programs — some hypothetical and others more realistic (based on actual sites) — were analyzed by multiple international modeling groups or individuals. Real-world data, such as those from the Chernobyl and Fukushima accidents, were also used in the exercises, some of which were “blind test,” meaning that the actual results are not revealed until modeling predictions are submitted. These model comparison and validation exercises have increased modelers’ understanding and confidence in using the models, as well as application of models to actual sites. **Biosketch:** Dr. Charley Yu is the RESRAD Program Manager and Environmental Nuclear Scientist in the Environmental Science Division of Argonne National Laboratory. Since joining Argonne in 1984, Dr. Yu has focused his research on modeling of radionuclide transport in the environment and the development of the RESRAD family of risk assessment codes. His current research interest includes radiological dose assessment of animals and plants, and improving dose assessment

	models to reduce uncertainty, run time, and user mistakes. Dr. Yu is a Certified Health Physicist by the American Board of Health Physics.
Brian Livingston, U.S. Army Public Health Center	**Title: Soil Screening Level Guidance for Radionuclides at Deployed Locations** **Abstract:** Military personnel are deployed around the world and might be exposed to a variety of toxic materials, including radionuclides. To assist military staffs in assessing radiological risk when planning missions, a standardized method is needed for comparing such sample results against risk-based screening levels. With these levels, consistent site-specific determinations can be made for the need of additional health risk assessment investigations. The Army Public Health Center recently published Technical Guide 390: Soil Screening Level Guidance for Radionuclides at Deployed Locations, which provides screening levels for several radionuclides as well as methodology and assumptions. The risk-based screening levels are based on the cancer slope factors from the EPA's Federal Guidance Report No. 13 and habit data adapted for Army-specific exposure scenarios. **Biosketch:** Brian Livingston has been a health physicist at U.S. Army Public Health Center since 2015. He was an Air Force officer for 9 years, during which time he worked at Cape Canaveral and the Armed Forces Radiobiology Research Institute. He also deployed to serve in Operation Tomodachi during the 2011 Fukushima Nuclear Incident. Mr. Livingston has a Bachelor's in math and physics from University of the Cumberlands and a master's degree in health physics from the Uniformed Services University. He became a Certified Health Physicist in 2013.
Alan Fellman, NV5 Dade Moeller	**Title: The LNT Hypothesis is NOT Valid to Estimate Future Cancer Risk; What That Tells Us About ALARA** **Abstract:** 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. Worldwide public health policy related to radiation is driven by the LNT-derived ALARA policy, impacting decisions that span numerous issues of great importance, including energy production, medicine, and environmental remediation. 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 does not exist at worst so as to maintain allegiance to a worldview of radiation safety built on LNT and ALARA. A sample of relevant findings refuting the LNT which throws the ALARA approach to radiation safety into question will be presented.

	Biosketch: Alan Fellman earned a Master of Public Health degree from the University of Michigan and a doctorate degree in Radiological Studies from New York University. He attained certification in Comprehensive Health Physics from the American Board of Health Physics in 1995. He has spent the bulk of his career providing radiation safety training and consulting services to a variety of commercial and public sector clients. He is a senior health physicist with NV5 Dade Moeller and is the manager of the NV5 Training Academy. Dr. Fellman's consulting experience includes preparation of radioactive materials license applications and written radiation safety programs for numerous NRC and Agreement State licensees, design of final status surveys in support of decommissioning, and comprehensive radiation safety program compliance audits. He has also provided litigation support to several clients, serving as an expert witness in lawsuits which included allegations related to radiation-induced health effects and other issues related to radiation.