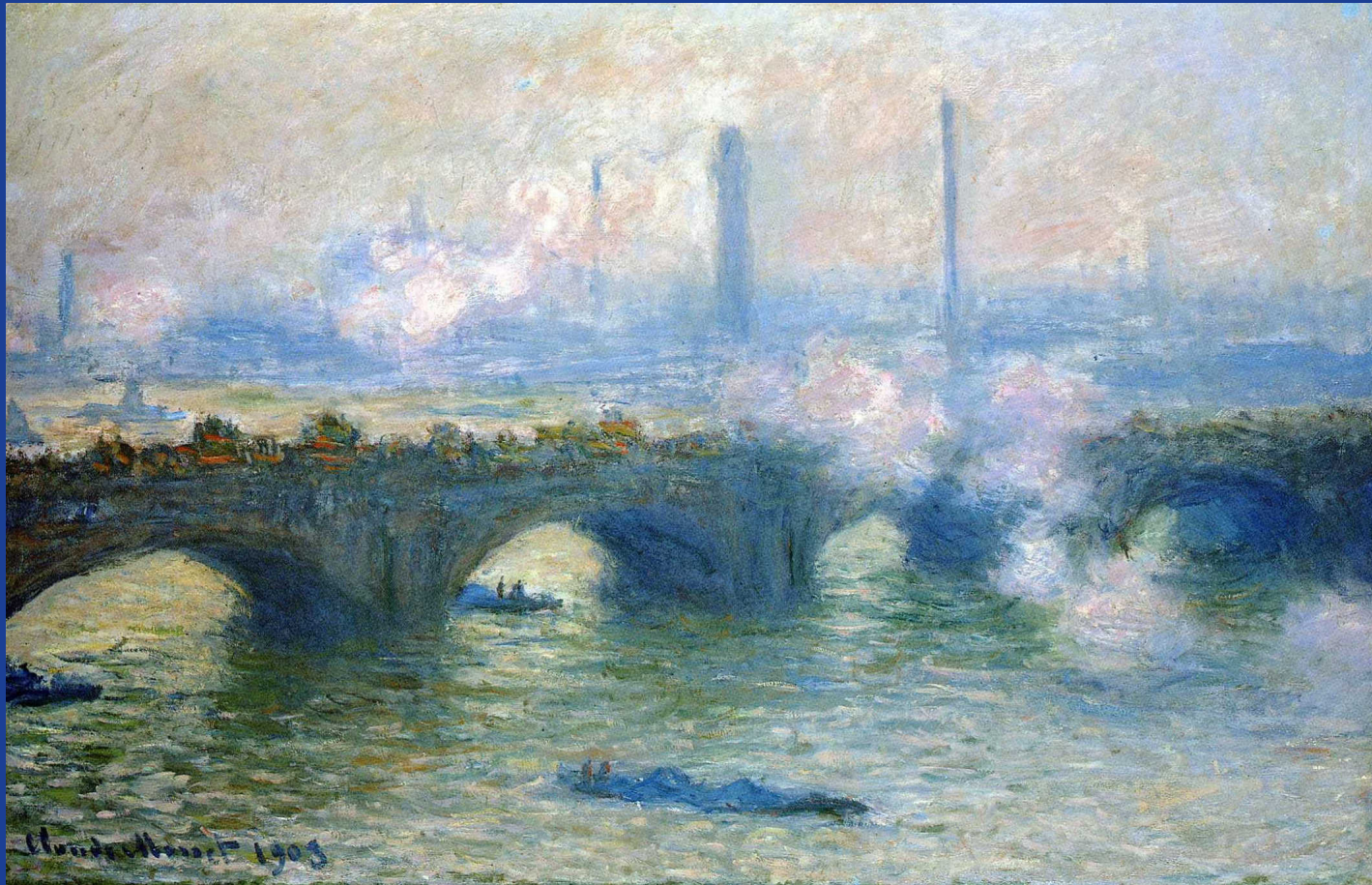# Society for Risk Analysis Annual Meeting

"Empires of Risk Analysis: Science, Policy, and Innovation"

Final Program
Crystal Gateway Marriott, Arlington, Virginia, USA
6-10 December 2015

Society For Risk Analysis Annual Meeting
2015 Final Program

Table of Contents

Meeting Highlights

Meeting Events! - All events take place at the Crystal Gateway Marriott. Start with the opening reception on Sunday in the Salon III-IV (6 December, 6:00-7:30 pm, Cash Bar), and continue to the closing T-Shirt Giveaway on Wednesday (9 December, 4:45 pm). The meeting includes three Plenary Sessions, and complimentary box lunch on Monday, Awards Banquet lunch on Tuesday (comes with your registration), and a purchased boxed lunch option (go to the SRA registration desk!) on Wednesday. Don't forget Workshops on Sunday and Thursday - there is still room!

Poster Reception! - This year's meeting will feature a poster reception with food and drinks in the Salon III-VI, on Monday evening from 6:00 to 8:00 pm. Poster set up starts at 3:00 pm, and poster presenters will be at their posters for questions and discussion during the reception. Vote for the best poster awards - on the App! Don't miss it!

Oral Presenter Ready Room Reminder - See Page 12 for Hours
If you are an Oral Presenter at the meeting, don't forget to upload your presentation in the
Speaker Ready Room (Arlington Office) at least 24 hours prior to your presentation.
If you have already uploaded your talk, come by the Ready Room to ensure it has been received and uploaded correctly.

Crystal Gateway Marriott

1700 Jefferson Davis Highway
Arlington, Virginia, USA 22202
1-703-920-3230

On the cover: Waterloo Bridge, Claude Monet, National Gallery of Art, Washington DC

SRA 2015 Specialty Group Merit Award Winners

Applied Risk Management
Zoya Banan

Decision Analysis and Risk
Elizabeth Connelly

Dose-Response
Miao Guo
Kerry Hamilton
Kelly Harris

Ecological Risk Assessment
Jeffrey Song

Economics and Benefits Analysis
Jonathan Welburn

Emerging Nanoscale Materials
Adeyemi Adeleye

Engineering and Infrastructure
Scott Thacker

Exposure Assessment
Maryam Delavarrafiee

Microbial Risk Analysis
Emmanuel de-Graft Owusu-Ansah
Alexis Layman Mraz

Occupational Health and Safety
Shao Zu Huang

Risk Policy & Law
Adam Abelkop

Security & Defense
Casey Canfield

SRA 2015 Student & International Award Winners

Markku Aaltonen
Adam Abelkop
Adeyemi Adeleye
Sidharth Agrawal
Jalal Ali
Elizabeth Alves
Artem Anyshchenko
Zoya Banan
Marissa Bell
Djillali Benouar
Geraldine Boué
Madeleine Brannon
Jean-Michel Camin
Casey Canfield
Yang-Ju Chen
Yu Han Chen
Yi-Jung Chou
Yu-Chuan Chuang
Elizabeth Connelly
Anne-Laure Cuvilliez
Amy Dale
Mariangel De Jesus Amín
Maryam Delavarrafiee
Qianli Deng
Barry Dewitt
Raul Figueroa
Rosa Maria Flores-Serrano
Lara Gaasland-Tatro
Miao Guo
Kerry Hamilton
Kelly Harris
Meagan Harris
Emina Herovic
Danail Hristozov
Hua-Hsuan Hsing
Shao Zu Huang
Yi Wei Huang
Firdevs Ilci

David Kang
Alexis Layman Mraz
Shuying Li
Lexin Lin
En-Hsuan Lu
Hang Lu
Oscar Andreas Marino Sanchez
Thanh Nguyen
Kenneth Nguyen
Emmanuel de-Graft Owusu-Ansah
Mabel Padlog
Chengfang Pang
Raghav Pant
Linh Phan
Julia Pletz
Chuanshen Qin
Vignesh Ramchandran
Sara Rezaee
Vanessa Schweizer
Piet Sellke
Mohamed Shereif Shereif
Jing Shi
Marissa Smith
Jeffrey Song
Joseph Steinhardt
Huimin Tan
Scott Thacker
Heimir Thorisson
Mohammed Faruque Uddin
Abhinav Walia
Jonathan Welburn
Paul White
John Wills
Charlene H Wu
An Gie Yong
Krista Danielle Yu
Jing Zhang
Yuyang Zhou

Conference Events, Committee Meetings

<u>Sunday 6 December</u>

SRA Council Meeting
Noon–5:00 PM - Salon B

Editorial Staff Meeting
4:30–5:30 PM - Salon G

Editorial Board Meeting
5:30–6:30 PM - Salon G

SRA Welcome Reception – (Cash Bar)
6:00–7:30 PM - Salon III-IV

<u>Monday 7 December</u>

New Member, Students/Young Professionals Breakfast
7:00–8:00 AM - Skyview
All SRA Students, Young Professionals as well as 2014 and 2015 New Members (badges with a New Member ribbon) are welcome to attend.

Finance Committee
7:00–8:30 AM - Jefferson

Conferences and Workshops Committee
7:30–8:30 AM - Lee

Publications Committee
8:00–8:30 AM - Jackson

Opening Plenary Session
8:30–10:00 AM - Salon III-VI

Specialty Group Meetings - *Pick up your box lunch by the SRA Registration Desk*
12:05–1:30 PM - See Page 4

Discussion of Possible 2017 World Congress on Science of Risk in Venice, Italy
5:00–5:30 PM - Lee

Africa Regional Organization Meeting
5:30–6:30 PM - Jefferson

Poster Reception
6:00–8:00 PM - Arlington Ballroom Salon III-VI

<u>Tuesday 8 December</u>

Audit Committee
7:00–8:00 AM- Fairfax

Grad Student Breakfast
7:00–8:00 AM - Madison

Risk Governance New Initiative Breakfast
7:30–8:30 AM - Jackson

Regions Committee
7:30–8:30 AM - Jefferson

Plenary Session
8:30–10:00 AM - Salon III-VI

SRA Awards Luncheon and Business Meeting
Noon–1:30 PM - Salon III-VI

Afternoon Coffee Break - Sponsored by American Chemistry Council
3:00–3:30 PM

Communications Committee
5:45–6:30 PM - Lee

SRA Specialty Group Mixers
6:00–7:30 PM - See page 4

National Area Capital Area Mixer
6:00–8:00 PM - Jackson

SRA Council Meeting
7:00–10:00 PM - Rosslyn

<u>Wednesday 9 December</u>

Education Committee Breakfast
7:00–8:00 AM - Jackson

Environment System & Decisions Editorial Board Meeting
7:30–8:30 AM - Lee

Specialty Group Chairs Breakfast
7:30–8:30 AM - Jefferson

Plenary Exhibition, Coffee and Snacks Available
9:30 AM–3:00 PM - Salon III-IV

Wednesday Bagel Box Lunch
No lunch provided Wednesday, purchase your box lunch for $25 at the SRA Registration Desk and take it to the Plenary or the Sessions

Membership Committee Meeting
12:30-1:30 PM - Lee

T-Shirt Giveaway
Stay until the end of the sessions and receive a T-Shirt
4:45 PM - Arlington Registration

Lunches Included in your Registration Fees
Monday Box Lunch, Tuesday Awards Banquet
Snacks included at Wednesday Plenary Exhibition
Please see the Regsitration Desk if you have dietary restrictions

Registration Hours
Crystal Gateway Marriott - Arlington Registration

Sunday 6 December	4:00 - 6:30 PM
Monday 7 December	7:00 AM - 5:00 PM
Tuesday 8 December	8:00 AM - 5:00 PM
Wednesday 9 December	8:00 AM - 5:00 PM

Specialty Group Meetings

Monday, 12/7 – *12:05–1:30 PM*

All Specialty Group Meetings will take place during lunch time on **Monday 7 December**. Pick up your box lunch near the Registration desk and attend the meeting(s) of your choice.

12:05-12:30 pm

Dose Response - *Grand Ballroom Salon J*
Economics & Benefits Analysis - *Arlington Ballroom Salon I*
Occupational Health & Safety - *Grand Ballroom Salon K*
Risk Communication - *Grand Ballroom Salon H*
Security & Defense - *Arlington Ballroom Salon II*

12:35-1:00 pm

Ecological Risk Assessment - *Grand Ballroom Salon J*
Exposure Assessment - *Arlington Ballroom Salon I*
Foundations of Risk - *Grand Ballroom Salon K*
Risk, Policy & Law - *Arlington Ballroom Salon II*
Risk & Development - *Grand Ballroom Salon H*

1:05-1:30 pm

Applied Risk Management - *Grand Ballroom Salon K*
Decision Analysis & Risk - *Grand Ballroom Salon J*
Emerging Nanoscale Materials - *Arlington Ballroom Salon I*
Engineering & Infrastructure - *Arlington Ballroom Salon II*
Microbial Risk Analysis - *Grand Ballroom Salon H*

Specialty Group Mixers

Tuesday, 12/8 – 6:00–7:30 PM

Mixer 1 - DRSG, MRASG, EASG, ARMSG - *Skyview*
Mixer 2 - SDSG, DARSG, EISG, FRSG - *Skyview*
Mixer 3 - RCSG, OHSG, ERASG - *Lee*
Mixer 4 - EBASG, ENMSG, RPLSG, RDSG - *Jefferson*
Mixer 5 - National Capital Area Mixer - *Madison*

Key to Specialty Group Designations

ARM = Applied Risk Management	FRSG = Foundations of Risk
DARSG = Decision Analysis and Risk	MRASG = Microbial Risk Analysis
DRSG = Dose-Response	OHSSG = Occupational Health & Safety
EASG = Exposure Assessment	RCSG = Risk Communication
EBASG = Economics & Benefits Analysis	RDSG = Risk & Development
EISG = Engineering and Infrastructure	RPLSG = Risk, Policy and Law
ENMSG = Emerging Nanoscale Materials	SDSG = Security and Defense
ERASG - Ecological Risk Assessment	

Be sure to attend the following Joint Roundtable Sessions:

M3-B Joint SRA/SBCA Roundtable: Improving the Link Between Risk Assessment and Economic Analysis
1:30 PM-3:00 PM, Grand Ballroom B
Sponsored by: Society for Benefit-Cost Analysis, Society for Risk Analysis

Society for Benefit-Cost Analysis

T3-G Joint SRA/AIHA Roundtable: Risks & Benefits of Electronic Cigarettes
1:30 PM-3:00 PM, Grand Ballroom J
Sponsored by: American Industrial Hygiene Association, Society for Risk Analysis

AIHA
Protecting Worker Health

T4-C Joint SRA/SOT Roundtable: Discussion on TSCA Reform
3:30 PM-5:00 PM, Grand Ballroom C
Sponsored by Society of Toxicology, Society for Risk Analysis

SOT | Society of Toxicology

W2-D Joint SRA/SETAC Roundtable: Scientific Integrity in Publications
9:45 AM-11:15 AM, Grand Ballroom DE
Sponsored by Society of Environmental Toxicology and Chemistry, Society for Risk Analysis

SETAC

Exhibition - Arlington Ballroom Foyer

Monday 7 December ....9:45 AM - 3:30 PM
Poster Reception (Salons III-VI) ....6:00 - 8:00 PM
Tuesday 8 December...9:45 AM - 3:30 PM
Wednesday 9 December...9:45 AM - 3:30 PM

Exhibitors

ICF International
9300 Lee Highway
Fairfax VA 22031
703-934-3000; Fax: 703-934-3740
www.icfi.com

ICF International (NASDAQ:ICFI) provides professional services and technology solutions that deliver beneficial impact in areas critical to the world's future. ICF is fluent in the language of change, whether driven by markets, technology, or policy. Since 1969, we have combined a passion for our work with deep industry expertise to tackle our clients' most important challenges. We partner with clients around the globe—advising, executing, innovating—to help them define and achieve success. Our more than 4,500 employees serve government and commercial clients from more than 70 offices worldwide.

ISES
1035 Sterling Road, Suite 202
Herndon, VA 20170
800-869-1551; Fax: 703-925-9453
www.isesweb.org

The International Society of Exposure Science (ISES) promotes and advances exposure science as it relates to the complex inter-relationships between human populations, communities, ecosystems, wildlife, and chemical, biological, and physical agents, and non-chemical stressors. ISES members have diverse expertise and training in biological, physical, environmental, and social sciences, as well as various engineering disciplines. ISES' multidisciplinary expertise and international reach make it the premiere professional society for practitioners associated with all aspects of exposure science.

SETAC
229 South Baylen Street, 2nd Floor
Pensacola, FL 32502
850-469-1500; Fax: 888-296-4136
www.setac.org

The Society of Environmental Toxicology and Chemistry is a not-for-profit, global professional organization comprised of some 6,000 members and institutions dedicated to the study, analysis and solution of environmental problems, the management and regulation of natural resources, research and development, and environmental education. Since 1979, the society has provided a forum where scientists, managers and other professionals exchange information and ideas.

Society of Benefit-Cost Analysis
c/o Evans School of Public Policy and Governance
University of Washington Box 353055, Parrington Hall, Room 303
Seattle, WA 98195-3055
206-616-4090
www.benefitcostanalysis.org

The Society of Benefit-Cost Analysis is an international, multi-disciplinary association working to promote and improve the theory and practice of benefit-cost analysis. Our members work in government, academia, nonprofits, and the private sector and address a wide range of policy issues.

Springer Science & Business Media
233 Spring Street
New York, NY 10013
781-347-1835
www.springer.com

Springer is proud to publish the journal: *Environment Systems and Decisions* and the new book series: *Risk Systems and Decisions*. Please stop by our table and pick up more information about these exciting new publications. Springer published roughly 2,200 English-language journals and more than 8,400 new books in 2013, and the group is home to the world's largest STM eBook collection, as well as the most comprehensive portfolio of open access journals.

Toxicology Excellence for Risk Assessment (TERA)
2300 Montana Avenue, Suite 409
Cincinnati, OH 45211
513-542-7475; Fax: 513-542-7487
www.tera.org

TERA is a non-profit organized for scientific and educational purposes. Our mission is to support the protection of public health by developing, reviewing and communicating risk assessment values and analyses; improving risk methods through research; and, educating risk assessors, managers, and the public on risk assessment issues.

**US Environmental Protection Agency (US EPA)**
1200 Pennsylvania Avenue NW, Maildrop 8601P
Washington, DC 20460
703-347-8545
www.epa.gov/ncea/

EPA's National Center for Environmental Assessment (NCEA) is a leader in the science of human health and ecological risk assessment. NCEA addresses the needs of stakeholders by preparing technical reports and assessments that integrate and evaluate the most up-to-date research. These products serve as a major component of the scientific foundation supporting EPA's regulations and policies.

Getting Our Event App is a Snap!

Scan the QR code to access our iPhone, iPad or Android event app today.

https://sra2015.quickmobile.mobi
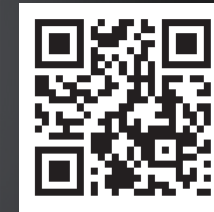
You can also download our event app from the App Store and Google Play!

Available on the **App Store**

Get it on **Google play**

Search: SRA Annual

Workshops - Sunday, 6 December

Sunday 6 December Full Day – 8:30 AM-5:30 PM
(Lunch is on your own, 12:30-1:30 PM)

WK2S: Cumulative Risk Assessment: Addressing Combined Environmental Stressors

Instructors: Linda K. Teuschler, LK Teuschler & Associates; Rick Hertzberg, Biomathematics Consulting; Margaret MacDonell, Argonne National Laboratory; Moiz Mumtaz, ATSDR; Jane Ellen Simmons, USEPA; Amanda M. Evans, Association of Schools of Public Health Research Fellow; Michael Wright, USEPA; Glenn E. Rice, USEPA

Onsite Cost: $400

Cumulative risk assessment (CRA) addresses the impacts of multiple chemical and nonchemical stressors on real world individuals and communities, resulting in complex exposures for individuals and populations with a variety of vulnerabilities, in applications that range from environmental justice and community sustainability to individual health promotion and protection. Nonchemical stressors include biological and physical agents (e.g., microbes and noise) as well as socioeconomic stressors and psychosocial conditions (e.g., associated with natural disasters). Public concerns that can initiate CRAs include (1) elevated environmental measurements or biomonitoring data; (2) multiple sources of pollutants or stressors; and (3) changes in disease rates or patterns (e.g., leukemia cluster) or ecological effects (e.g., loss of wildlife diversity). This workshop focuses on human health and begins with an overview of three CRA elements: analysis, characterization, and quantification (as feasible) of the combined risks from multiple stressors. Teaching methods include lectures and hands-on exercises. Presentations highlight basic concepts, methods, and resources for conducting a population-based CRA. A central theme is integrating exposure and dose-response information with population characteristics during planning and scoping based on initiating factors. Vulnerability factors are addressed, e.g., diet/nutritional status, behaviors, genetic traits, socioeconomic status, sensitivities, and psychosocial stress. Methods for estimating human health risks are discussed and applied, including epidemiologic approaches and assessing the joint toxicity of chemical mixtures. In the exercises, participants develop chemical, biological and physical stressor groups using exposure and toxicity factors, link them with population vulnerability factors and conduct a risk characterization. Participants are asked to bring a calculator.

WK4S: Fundamentals of the Risk Assessment Paradigm, From Hazard Characterization to Risk Communication, with an Emphasis on Contaminated Sites

Instructors: Michael P. Musso, HDR, Inc.; Lynne Haber, Toxicology Excellence for Risk Assessment (TERA) Center at the University of Cincinnati

Onsite Cost: $375

This course is aimed at entry to mid-Level risk assessors and environmental professionals. Taught by experienced risk assessors in toxicological risk assessment and site assessment, the course addresses the four elements of the risk assessment paradigm for human health risk assessment (HHRA). The complementary expertise of the teachers provides site assessors with an improved understanding of the key issues underlying risk values, and provides toxicological risk assessors with an improved understanding of the real-world challenges in applying risk values. The exposure assessment portion focuses on issues related to characterizing hazardous waste sites, Brownfields, and other settings. Human health receptors of relevance, along with EPA exposure factors, will be discussed. Examples of conceptual site models (CSMs) will be presented. The hazard characterization and dose-response assessment portions of the course provide a practical understanding of both the fundamental thought processes for developing risk values, and how these methods are evolving with modern biology. We address key concepts for evaluating toxicity data, integrating toxicokinetics data into an understanding of a chemical's toxicity, and for developing an overall weight of evidence evaluation. Dose response assessment and the importance of mode of action will also be addressed. The course will conclude with a discussion of risk characterization and risk communication. Key resources, reference documents and tools will be noted. The course will be interactive and will include in-class exercises.

WK5S: Monte Carlo Simulation And Probability Bounds Analysis in R with Hardly any Data

Instructor: Scott Ferson, Applied Biomathematics

Onsite Cost: $320

This revamped full-day workshop features hands-on examples worked in R on your own laptop, from raw data to final decision. The workshop introduces and compares Monte Carlo simulation and probability bounds analysis for developing probabilistic risk analyses when little or no empirical data are available. You can use your laptop to work the examples, or just follow along if you prefer. The examples illustrate the basic problems risk analysts face: not having much data to estimate inputs, not knowing the distribution shapes, not knowing their correlations, and not even being sure about the model form. Monte Carlo models will be parameterized using the method of matching moments and other common strategies. Probability bounds will be developed from both large and small data sets, from data with non-negligible measurement uncertainty, and from published summaries that lack data altogether. The workshop explains how to avoid common pitfalls in risk analyses, including the multiple instantiation problem, unjustified independence assumptions, repeated variable problem, and what to do when there's little or no data. The numerical examples will be developed into fully probabilistic estimates useful for quantitative decisions and other risk-informed planning. Emphasis will be placed on the interpretation of results and on how defensible decisions can be made even when little information is available. The presentation style will be casual and interactive. Participants will receive handouts of the slides and a CD with software and data sets for the examples.

WK6S: Categorical Regression Modeling

Instructors: J. Allen Davis, US EPA; Jeff Gift, US EPA; Jay Zhao; US EPA

Onsite Cost: $350

The objective of this full-day course is to provide participants with interactive training on the use of the US Environmental Protection Agency's (EPA) Categorical Regression software (CatReg) and its application to risk assessment. Categorical regression modeling involves fitting mathematical models to toxicity data that has been assigned ordinal severity categories (i.e., minimal, mild, or marked effects) and can be associated with up to two explanatory variables corresponding to exposure conditions, usually concentration and duration. CatReg calculates the probabilities of observing the different severity categories over the continuum of the explanatory variables describing expo-sure conditions. The categorization of observed responses allows the expression of dichotomous, continuous, and descriptive data in terms of response severity and supports the analysis of data from single studies or multiple studies. CatReg can also estimate the lower confidence limit on the dose (the equivalent of a BMDL) associated with a given severity probability and exposure duration. Additionally, the meta-analytical capability of CatReg allows for the filtering of data in order to determine statistically significant different responses between sexes, strains, and/or species. Recently, EPA has released a new graphic-user interface for CatReg that will greatly increase the efficiency with which users can perform categorical regression analyses; this version of the software will be the focus of this training workshop. Participants need to bring their own laptops, with CatReg installed, to the workshop. The latest version of the software program can be found at: www.epa.gov/ncea/catreg. Disclaimer: The views expressed in this abstract are those of the authors and do not necessarily reflect the views or policies of the US EPA.

WK7S: Integrating Strategic Risk Communication with Risk Management to Enhance Organizational and Behavioral Change

Organizers: Steve Ackerlund, Kleinfelder; Daniel Kovacs, Decision Partners
Instructors: Gordon Butte, Sarah Thorne; Decision Partners

Onsite Cost: $500

Successful risk management depends on the design, adoption, and implementation of plans and processes that achieve organizational and individual behavioral change. These plans and processes often fall short of achieving optimal outcomes because the technical elements are not aligned with the values, needs, interests and priorities of all of the relevant stakeholders, both within and outside the organization – those who determine project success through their judgments, decision making and behavior. This can result is risk management plans that are not implemented, or are implemented in a non-optimal manner despite their high intrinsic value. This full-day workshop will introduce the state-of-the-science concepts and practices of Strategic Risk Communications and stakeholder engagement to systematically understand and influence judgment, decision making and behavior as an integrated element of effective risk management. Using lecture, case study review and interactive class exercise formats, facilitators will provide examples from real-world projects that successfully integrated risk communication and risk management. The Mental Modeling Technology™ (MMT) approach will be presented and discussed as a core technique for understanding and communicating about risk, along

with other methods to address wide-ranging communication and stakeholder engagement needs. The workshop will feature a dialogue and problem-solving session where participants will be encouraged to share their own risk challenges. Simple tools and templates for integration of risk communication and risk management will be used in the workshop to allow participants to develop solutions to current needs in their organizations.

Sunday 6 December AM – 8:00 AM-Noon

WK8S: Eliciting Judgments from Experts and Non-experts to Inform Decision-Making
Instructors: Aylin Sertkaya, Eastern Research Group, Inc. (ERG); Cristina McLaughlin, FDA; Frank Hearl, NIOSH; Christy Parson, US EPA; Elizabeth L. Durmowicz, US FDA
Onsite Cost: $300

Decision makers must frequently rely on data or information that is incomplete or inadequate in one way or another. Judgment, often from experts and occasionally from non-experts, then plays a critical role in the interpretation and characterization of those data as well as in the completion of information gaps. But how experts or non-experts are selected and their judgments elicited matters – they can also strongly influence the opinions obtained and the analysis on which they rely. Several approaches to eliciting judgments have evolved. The workshop will cover topics ranging from recruitment, elicitation protocol design, and different elicitation techniques (e.g., individual elicitations, Delphi method, nominal group technique, etc.) to aggregation methods for combining opinions of multiple individuals. The role of judgment elicitation and its limitations, problems, and risks in policy analysis will also be addressed. The workshop will include presentation of two case studies that will include a discussion of the selection process; elicitation protocol development, elicitation technique utilized, and the various issues that arose before, during, and after the elicitation process and the manner in which they were resolved. The class will also include two hands-on exercises where participants will 1) learn about calibration of experts using a mobile application and 2) apply the Delphi and nominal group techniques to examine risk management issues associated with electronic cigarettes.

Sunday 6 December PM – 1:00 -5:00 PM

WS10S: Regional Scale Ecological Risk Assessment with Bayesian Networks
Instructors: Wayne G. Landis, Western Washington University; Lara Gaasland-Tatro, Western Washington University
Onsite Cost: $350

The workshop introduces the students to the estimation of ecological risks at the landscape scale using the relative risk model and its Bayesian network incarnation. The basic methodology has been used in studies across the world excepting Antarctica. Although originally developed for contaminants, the relative risk model is now used for issues ranging from invasive species to climate change. The course covers the derivation of cause-effect models, the application of geographic information systems in the process, risk calculations, describing uncertainty, and risk communication. Now the relative risk model uses Bayesian networks to calculate risk and the conversion from cause-effect conceptual model to function Bayesian network will be described. One of the advantages of the Bayesian network relative risk model is the ease in which it calculates the conditions necessary to reduce risk or modification to include management options. A series of case studies will be presented to demonstrate the utility of the overall approach for estimating risk due to multiple stressors, invasive species, fire and global climate change. Recently methods have been developed to integrate ecological risk assessment with risks to ecosystem services and human health. Summaries of the new methods will be presented as part of the class. Students should bring a laptop and have downloaded the free version of Netica available at https://www.norsys.com/download.html. Examples of the models used to teach the course will be available for download.

WK12S: Methods for Quantifying and Valuing Population Health Impacts
Instructors: Kevin Brand, University of Ottawa; Sandra Hoffman, USDA
Onsite Cost: $325

The workshop reviews standard practices and emerging issues related to the quantification of a population's health state. Particular attention is paid to the array of metrics available for this purpose, their use in quantifying population health impacts, and how these impact projections can be integrated into economic valuations. Risk assessment typically couples exposure information

with an exposure-response relationship to estimate changes in incidence rates (e.g., a mortality rate). Expressed in this fashion (along an incident rate scale) these impact measures fall short. They do not capture the burden of disease, are not readily interpretable, complicate the comparison of disease outcomes, and are not suited to a single number summary. This workshop focuses on the methods required to get readily interpretable, comparable, bottom-line, summaries of health impact. A dizzying array of metrics can be used to quantify health impacts. Consider for example "avoidable deaths," PEYLLs, life-expectancy, lifetime risk, HALEs, QALYs, DALEs, DALYs and `attributable-fractions' to name just a few. In this workshop we survey and bring order to these variants, classifying the metrics into a couple of categories. A finer grained classification is provided based on how the metric is calculated; for example does it adjust for the size and age structure of the population under study. The key choices and their influence upon projected outcomes will be outlined. Finally, a survey of the key steps and considerations that are required to map the health impacts, expressed in units such as change in life-expectancy, into health-economic evaluations will be offered.

Thursday 10 December Full Day – 8:30 AM-5:30 PM

WK13T: Monte Carlo Simulation and Probability Bounds Analysis in R with Hardly any Data
Instructor: Scott Ferson, Applied Biomathematics
Onsite Cost: $320

This revamped full-day workshop features hands-on examples worked in R on your own laptop, from raw data to final decision. The workshop introduces and compares Monte Carlo simulation and probability bounds analysis for developing probabilistic risk analyses when little or no empirical data are available. You can use your laptop to work the examples, or just follow along if you prefer. The examples illustrate the basic problems risk analysts face: not having much data to estimate inputs, not knowing the distribution shapes, not knowing their correlations, and not even being sure about the model form. Monte Carlo models will be parameterized using the method of matching moments and other common strategies. Probability bounds will be developed from both large and small data sets, from data with non-negligible measurement uncertainty, and from published summaries that lack data altogether. The workshop explains how to avoid common pitfalls in risk analyses, including the multiple instantiation problem, unjustified independence assumptions,

repeated variable problem, and what to do when there's little or no data. The numerical examples will be developed into fully probabilistic estimates useful for quantitative decisions and other risk-informed planning. Emphasis will be placed on the interpretation of results and on how defensible decisions can be made even when little information is available. The presentation style will be casual and interactive. Participants will receive handouts of the slides and a CD with software and data sets for the examples.

Thursday 10 December AM – 8:00 AM-Noon

WK14T: Chemical Mixtures Health Risk Assessment of Environmental Contaminants: Concepts, Methods, Applications
Instructors: Linda K. Teuschler, LK Teuschler & Associates; Rick Hertzberg, Biomathematics Consulting; Moiz Mumtaz, ATSDR; Glenn E. Rice, USEPA
**Onsite Cost: $175**

This problems-based, half-day, introductory workshop focuses on methods to assess health risks posed by exposures to chemical mixtures in the environment. The workshop will present key concepts and terminology used in chemical mixtures risk assessment. This workshop will discuss component methods that utilize assumptions of response addition and dose addition, including the following dose-additive methods: the hazard index, the interaction-based hazard index, relative potency factors, and toxicity equivalence factors. The cumulative relative potency factors method also will be described. The workshop also will address whole mixture methods for assessing risks associated with environmental chemical mixtures; this will include discussion and examples of sufficient similarity. The exercises developed in the workshop will be adapted from mixtures risk assessments conducted for waste sites, pesticide applications, metal exposures, and drinking water disinfection by-product exposures. The "hands-on" exercises demonstrating the methods are an essential part of this workshop. Discussions include real world examples, exercise results, and answers to general questions. (We ask participants to bring a calculator or laptop). The views expressed in this abstract are those of the authors and do not reflect those of the US Environmental Protection Agency.

WK15T: Developments in Risk Assessment: State of the Science for Evaluating Toxicity Data for Human Health Risk Assessment

Instructor(s): Lynne Haber, Toxicology Excellence for Risk Assessment (TERA) Center at the University of Cincinnati

Onsite Cost: $275

This workshop will builds on the concepts presented in the Sunday workshop (WK4S/11S), presenting advanced methods for human health risk assessment, focusing on the hazard characterization and dose-response portions of the risk assessment paradigm. The workshop will present state of the science information on advanced topics. The first module addresses WHO/IPCS methods for considering weight of evidence for evaluating mode of action, and considering human relevance of the mode of action. The second module addresses the EPA method for data-derived extrapolation factors (DDEFs) and the related IPCS method for chemical specific adjustment factors (CSAFs). These methods use data on a chemical's toxicokinetics or toxicodynamics to refine the extrapolation from animals to humans, or the characterization of human variability. The final module addresses international developments, including predictive tools, combined exposures, and more efficient testing strategies. The course will be interactive and provide opportunities for participants to ask questions.
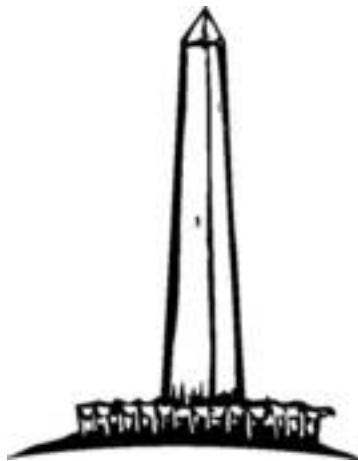
SRA Fourth World Congress - July 2015

Special thanks to the sponsors, organizers, and contributors of the successful 2015 SRA World Congress on Risk which convened in Singapore in July 2015

Chijmes Hall, 2015 SRA Fourth World Congress on Risk, Singapore, July 2015 Opening Reception

Plenary Exhibition. Selected artists and humanitarians of the National Capital Region and beyond will provide exhibits and discussion on the themes of the Annual Meeting, on Wednesday, with coffee and snacks provided.

Announcing the 2016 SRA Membership Drive

The SRA is an exciting international society for professionals who deal with risk analysis for a diverse set of multidisciplinary areas. SRA members enjoy collaborations with the risk analysis community, receive copies of the journal *Risk Analysis*, receive up to date communications, host or give SRA webinars and attend SRA supported meetings and workshops.

SRA is looking to increase its membership and offer these benefits to a wider audience from academia, government, industry, consulting and non-government organizations. SRA is promoting new membership signups at the Annual Meeting and is offering one of two gifts to all new members (pre-registrations included) - **Receive yours at the SRA Registration Desk!**

Sign up Today!

Laser Pointer LED Light – OR – Portable Power Bank

Mark your calendar!

Dates for the 2016 - 2018 Annual Meetings:

2016 - 11-15 December
Sheraton, San Diego, California

2017 - 10-14 December
Crystal Gateway Marriott, Arlington, Virginia

2018 - 9-13 December
Marriott, New Orleans, Louisiana

Speaker Ready Grand Ballroom Hours
Crystal Gateway Marriott - Arlington Office

Sunday	3:00 - 8:00 PM
Monday & Tuesday	7:00 AM - 5:00 PM
Wednesday	7:00 AM - Noon

PLENARY SESSIONS
All Plenary Sessions will be held in the Crystal Gateway Marriott

Monday 7 December, Morning Plenary, 8:30 – 10:00 AM, Arlington Ballroom Salon III-VI
"Risk Analysis, Enterprise Innovation, and the Corporate Scientist"
Exploring business dimensions with early career researchers, including one who uncovered a $30 billion liability of the world's largest automaker
Panelists: *Nicky Cariglia, The International Tanker Owners Pollution Federation Limited, London UK*
Arvind Thiruvengadam, Center for Alternative Fuels, Engines and Emissions, West Virginia University
Sonna Patel-Raman, Chief Operating Officer, NuPulseCV, formerly Branch Chief, US Food and Drug Administration
Moderator: *Steven C. Lewis, formerly ExxonMobil, currently President and Principal Scientist at Integral Policy & Science, LLC*

Tuesday 8 December, Morning Plenary, 8:30 – 10:00 AM, Arlington Ballroom Salon III-VI
"Global Migration Challenges, Risk, and Resilience"
Refugees, state borders, and immigration are a critical frontier of Society interests across health and welfare, environment,
law, policy, development, infrastructure, communication, economics, security, and other of the technical specialties
Keynote Speakers: *Kathleen Newland, Co-Founder and Senior Fellow, Migration Policy Institute*
Jana Mason, Senior Advisor, United Nations High Commissioner for Refugees
Moderator: *José Palma-Oliveira, University of Lisbon, Portugal*

Wednesday 9 December, Plenary Exhibition, 9:30 AM – 3:00 PM, Arlington Ballroom Salon III-VI
"Risk and Resilience in Art and Cultural Change"
Visit the Plenary Exhibition around attending the Technical Sessions
Artists and humanitarians who address risk and resilience will provide interactive exhibits and discussion,
with coffee and snacks available all day
Exhibitors: *A variety of inspiring artists from the National Capital Region and beyond*

Monday 7 December 2015

7:00-8:00 AM	**New Member, Students/Young Professionals Breakfast** - *Skyview*

8:30 - 10:00 AM	**Plenary Session,** "Risk Analysis, Enterprise Innovation, and the Corporate Scientist" - *Arlington Ballroom Salon III-VI* *Panelists: Nicky Cariglia, Arvind Thiruvengadam, Sonna Patel-Raman; Moderator: Steven C. Lewis*

10:00-10:30 AM	**Coffee Break**

	Grand Ballroom A	Grand Ballroom B	Grand Ballroom C	Grand Ballroom DE	Grand Ballroom FG
10:30 AM-Noon	**M2-A Symp**: Current Challenges in the Translation and Application of High-Through Put Data into Human Risk Assessment and Chemical Safety Evaluation	**M2-B Roundtable:** Examining Intersections of International Development with Defense, Infrastructure and Ecological Risk	**M2-C Symposium:** Are Gene Drives the Next Risk Governance Challenge	**M2-D Roundtable:** Identifying and Promoting Core Knowledge Risk Management	**M2-E** Engineering and Infrastructure: Advances in Infrastructure Risk Modeling
Noon-1:30 PM	Pick up your box lunch near the Registration desk and attend the specialty group meeting(s) of your choice. **See page 4 for details.** 12:05-12:30 PM - Dose-Response, Economics & Benefits, Occupational Health & Safety, Risk Communication, and Security & Defense Specialty Groups 12:35-1:00 PM - Ecological Risk Assessment, Exposure Assessment, Foundations of Risk, Risk Policy & Law, and Risk & Development Specialty Groups 1:05-1:30 PM - Applied Risk Management, Decision Analysis and Risk, Emerging Nanoscale Materials, Engineering & Infrastructure, and Microbial Risk Analysis Specialty Groups				
1:30-3:00 PM	**M3-A** D3: Doing Dose - Response Differently	**M3-B** Joint SRA/SBCA Roundtable: Improving the Link Between Risk Assessment and Economic Analysis	**M3-C Presidential Symposium:** Comparisons and Perspectives on Risk Assessment Programs	**M3-D** Air and Water Quality	**M3-E Symposium:** Nanotechnology Risk Governance: Current and Future Approaches to Managing Potential Risks from Emerging Nanomaterials Part 1
3:00-3:30 PM	**Coffee Break**				
3:30-5:00 PM	**M4-A Symposium:** Addressing Model Uncertainty in Dose-Response Analysis for Chemical Risk Assessment	**M4-B Symposium:** Quantifying Armed Conflict and Social Unrest	**M4-C Symposium:** Human Volunteer Inhalation Exposure Studies: Informing Risk Assessments and Policy	**M4-D** Perceptions of Risk Versus Actual Risk in Ecological Assessments	**M4-E Symposium:** Nanotechnology Risk Governance: Current and Future Approaches to Managing Potential Risks from Emerging Nanomaterials Part 2

6:00-8:00 PM	**Poster Reception,** *Arlington Ballroom Salon III-VI*

7:00-8:00 AM	**New Member, Students/Young Professionals Breakfast** - *Skyview*

8:30 - 10:00 AM	**Plenary Session,** "Risk Analysis, Enterprise Innovation, and the Corporate Scientist" - *Arlington Ballroom Salon III-VI* *Panelists: Nicky Cariglia, Arvind Thiruvengadam, Sonna Patel-Raman; Moderator: Steven C. Lewis*

10:00-10:30 AM	**Coffee Break**

	Grand Ballroom H	**Grand Ballroom J**	**Grand Ballroom K**	**Arlington Ballroom I**	**Arlington Ballroom II**
10:30 AM-Noon	**M2-F Symposium:** Current Emerging Microbial Initiatives at the Food Safety and Inspection Service (FSIS)	**M2-G** Weapons of Mass Destruction: Risk and Response	**M2-H Symposium:** Advantages and Impacts of Big Data for Food Intake Risk Assessment	**M2-I Symposium:** Acceptable Risk: A Willing Suspension of Hierarchical Assumptions, Part 1	**M2-J Symposium:** The Role of Knowledge and Experience in Public Perception of Climate Change
Noon-1:30 PM	Pick up your box lunch near the Registration desk and attend the specialty group meeting(s) of your choice. **See page 4 for details.** 12:05-12:30 PM - Dose-Response, Economics & Benefits, Occupational Health & Safety, Risk Communication, and Security & Defense Specialty Groups 12:35-1:00 PM - Ecological Risk Assessment, Exposure Assessment, Foundations of Risk, Risk Policy & Law, and Risk & Development Specialty Groups 1:05-1:30 PM - Applied Risk Management, Decision Analysis and Risk, Emerging Nanoscale Materials, Engineering & Infrastructure, and Microbial Risk Analysis Specialty Groups				
1:30-3:00 PM	**M3-F Symposium:** Update on Salmonellosis: Why is it Still a Major Public Health Issues and What Value Does Risk Assessment have in Redirecting the Burden?	**M3-G Symposium:** Modeling and Validating Attacker/Defender Games	**M3-H Roundtable:** Foundations of Risk Analysis	**M3-I Symposium:** Acceptable Risk: A Willing Suspension of Hierarchical Assumptions, Part 2	**M3-J** Climate Change Perception and Communication
3:00-3:30 PM	**Coffee Break**				
3:30-5:00 PM	**M4-F** Multi-Disciplinary - Historical and Contemporary Applications - I	**M4-G Symposium:** Corporate Decision-Making Based on Occupational Risk Assessment	**M4-H Symposium:** Foundational Issues in Risk Analysis I: Risk Assessments, Uncertainties and the Unforeseen	**M4-I Symposium:** Risk Based Product Evaluation: Approaches and Stakeholder Perspectives	**M4-J Symposium:** Public Perceptions of Fracking Risks: US and UK Perspectives

6:00-8:00 PM	**Poster Reception,** *Arlington Ballroom Salon III-VI*

8:30 - 10:00 AM	**Plenary Session,** "Global Migration Challenges, Risk, and Resilience" - *Arlington Ballroom Salon III-VI*
	Keynote Speakers: Kathleen Newland, Jana Mason; Moderator: José Palma-Oliveira

	Grand Ballroom A	Grand Ballroom B	Grand Ballroom C	Grand Ballroom DE	Grand Ballroom FG
10:30 - AM Noon	**T2-A Symposium:** Probabilistic Approaches to Dose-Response Analysis in Chemical Risk Assessment	**T2-B** Intersections of International Development with Infrastructure Risk and Risk Communication	**T2-C Symposium:** Valuing Foreign Lives in Genocide and Mass Atrocities: Law, Intervention, and the Prominence Effect	**T2-D Presidential Roundtable:** Applying the SRA Code of Ethics	**T2-E Roundtable:** EU Nano Safety Cluster
10:00-10:30 AM	**Coffee Break**				
1:30- 3:00 PM	**T3-A** R3: Reconsidering Regulatory Risks	**T3-B Symposium:** Retrospective Analysis and the Characterizations of Uncertainty in Risk Management Policies: Part I	**T3-C** Trust, Credibility and Risk Communication	**T3-D** Risk and Resilience	**T3-E Symposium:** Expanding Policy and Practice for Resilience Planning at National and Regional Levels
Noon-1:30 PM	SRA Awards Luncheon and Business Meeting (Included in Registration Fee)				
	Includes all SRA Awards, and the 5 Best Poster Award Winners from Monday's Poster Reception.				
3:30- 5:00 PM	**T4-A Symposium:** Genetic Toxicology at the CrossRoads: Moving from Qualitative Hazard Identification to Quantitative Risk Assessment	**T4-B Symposium:** Retrospective Analysis and the Characterizations of Uncertainty in Risk Management Policies: Part 2	**T4-C Joint SRA/SOT Roundtable:** Discussion on TSCA Reform	**T4-D** Wicked Problems, Black Swans, Climate Change and Ecological Risk	**T4-E Symposium:** Risk-Informed and Decision-Making for Critical Infrastructure
3:00-3:30 PM	**Coffee Break -** *Sponsored by* **American Chemistry Council**				
5:15- 6:30 PM	**T5-A Roundtable:** IRIS CAFE: An Open Space Discussion Among IRIS Leaders and Stakeholders				
6:00-7:30 PM	**Specialty Group Mixers**				

	Grand Ballroom H	Grand Ballroom J	Grand Ballroom K	Arlington Ballroom I	Arlington Ballroom II
8:30 - 10:00 AM	Plenary Session, "Global Migration Challenges, Risk, and Resilience" - *Arlington Ballroom Salon III-VI* / *Keynote Speakers: Kathleen Newland, Jana Mason; Moderator: José Palma-Oliveira*				

10:30 - AM Noon	**T2-F** Modeling Environmental Transmission of Microbes	**T2-G Symposium:** Behavioral Models of Agents in Security and Defense	**T2-H Roundtable:** Incorporation of Information on Endogenous Chemicals with Exogenous Exp.	**T2-I Symposium:** Modernizing Risk Analysis with Cross Functional Perspectives to Guide Regulating Decisions for Food Safety	**T2-J** Natural Hazards Perception and Communication
10:00-10:30 AM	Coffee Break				
10:30 AM-Noon	**T3-F** Microbial Risk Modeling	**T3-G** Joint SRA/AIHA Roundtable: Risks & Benefits of Electronic Cigarettes	**T3-H** New Tools and Models for Chemical Exposure Assessment	**T3-I Presidential Roundtable:** Eco-Environmental Risk Management in China: Insights and Recommendations of the 2015 China Council (CCICED) Report to the National Government	**T3-J** Coping with the Wild
Noon-1:30 PM	SRA Awards Luncheon and Business Meeting (Included in Registration Fee) / Includes all SRA Awards, and the 5 Best Poster Award Winners from Monday's Poster Reception.				
1:30-3:00 PM	**T4-F** New Computational Tools for Microbial Risk Assessment	**T4-G Symposium:** Global Catastrophic Risks	**T4-H** Innovations, Methods, and Best Practices for Chemical Exposure Assessment	**T4-I** Empires Big and Small: Multi-Level Systems Analysis for Decisions	**T4-J** Risk Attitudes and Behavior
3:00-3:30 PM	Coffee Break - *Sponsored by* **American Chemistry Council**				
5:15-6:30 PM					
6:00-7:30 PM	**Specialty Group Mixers**				

9:30 AM - 3:00 PM   **Plenary Exhibition,** "Risk and Resilience in Art and Cultural Change" - *Arlington Ballroom Salon III-VI*
Exhibitors: A variety of inspiring artists from the National Capital Region and beyond

	Grand Ballroom A	Grand Ballroom B	Grand Ballroom C	Grand Ballroom DE	Grand Ballroom FG
8:00-9:30 AM	**W1-A Symposium:** Challenging the Status Quo for Dose-Response Analysis of Chemicals Part I	**W1-B Symposium:** Frontiers in Benefit-Cost and Risk Analysis	**W1-C Symposium:** Recognizing and Measuring Excellence among Risk Regulatory Agencies Worldwide	**W1-D Symposium:** Managing the Risk of Radiological and Nuclear Threats: Identification, Assessment, Capability Building, and Implementation	**W1-E Symposium:** Hazard Communication for Nanoscale Materials: Addressing Hazards Under the Globally Harmonized System for Classification

9:30-9:45 AM   Join us for the an all-day exhibition on the theme of "Risk and Resilience in Art and Cultural Change," Salon III-VI

9:45-11:15 AM	**W2-A Symposium:** Challenging the Status Quo for Dose-Response Analysis of Chemicals Part II	**W2-B Roundtable:** Decision Analysis for Uncertain Futures	**W2-C Presidential Roundtable:** More than Science Alone: How Best to Accept Tox 21 Results to Inform Decision Making?	**W2-D Joint SRA/SETAC Roundtable:** Scientific Integrity in Publications	**W2-E** Developments in Environmental and Biological Risk Assessment for Nanoscale Materials

11:15-11:30 AM   Join us for the an all-day exhibition on the theme of "Risk and Resilience in Art and Cultural Change," Salon III-VI

11:30 AM-1:00 PM	**W3-A Symposium:** Multi-Disciplinary - Cognitive Testing	**W3-B Symposium:** Multi-Disciplinary - Too Little Information: Too Many Voices	**W3-C Roundtable:** Resilience and Risk: Similarities and Differences	**W3-D** Multi-Disciplinary - Historical and Contemporary Applications - II	**W3-E** Multi-Disciplinary - Ebola I

1:00-1:15 PM   Join us for the an all-day exhibition on the theme of "Risk and Resilience in Art and Cultural Change," Salon III-VI

1:15-2:45 PM	**W4-A Roundtable:** Exploring Influences of the Microbiota on Innate Immunity and Microbial Dose-Response Relationship	**W4-B Presidential Session:** Weight of Evidence and Standard of Proof: A Nexus	**W4-C Symposium:** The New Biology of Risk: New Roles for Genetics and Epigenetics in Risk-Based Decision-Making	**W4-D** Data Quality and Application to Regulatory Decisions	**W4-E Symposium:** Strategic Decision-Making for Infrastructure Safety and Security

2:45-3:00 PM   Join us for the an all-day exhibition on the theme of "Risk and Resilience in Art and Cultural Change," Salon III-VI

3:00-4:30 PM	**W5-A Symposium:** Moving Towards a Harmonized Risk Assessment Process	**W5-B Symposium:** Measuring Capacity to Manage Health Risks	**W5-C Symposium:** HowSAFE: Lessons from Varieties of Risk Regulation Across Europe	**W5-D** Emergency and Risk Planning	**W5-E** Engineering and Infrastructure: Managing Risks for Energy Infrastructure Systems

4:45 PM   **T-Shirt Giveaway** - *Registration Area*
Receive a free T-Shirt!

9:30 AM - 3:00 PM **Plenary Exhibition,** "Risk and Resilience in Art and Cultural Change" - *Arlington Ballroom Salon III-VI*
Exhibitors: A variety of inspiring artists from the National Capital Region and beyond

	Grand Ballroom H	Grand Ballroom J	Grand Ballroom K	Arlington Ballroom I	Arlington Ballroom II
8:00-9:30 AM	**W1-F** New Tools for Risk Assessment	**W1-G** Authentic Cyber Phish in Water	**W1-H Symposium:** Using MOA/AOP Frameworks for Chemical-Specific Decisions: Prioritizations through Risk Assessment	**W1-I Symposium:** Benefit-Risk Assessment for Medical Products	**W1-J** Opportunities and Effects of Risk Visualization

9:30-9:45 AM Join us for the an all-day exhibition on the theme of "Risk and Resilience in Art and Cultural Change," Salon III-VI

9:45-11:15 AM	**W2-F Symposium:** Risk-Benefit, Communication and Decision Making in Food Safety	**W2-G Symposium:** Aviation Security with Dynamic Risk Management	**W2-H** Exposure to Inform Risks from Oil and Gas Development	**W2-I Symposium:** The Highest Court Draws the Highest Risk Boundary: 35 Years of Regulating under the Benzene Decision	**W2-J** Communication Formats and Responses

11:15-11:30 AM Join us for the an all-day exhibition on the theme of "Risk and Resilience in Art and Cultural Change," Salon III-VI

11:30 AM-1:00 PM		**W3-G** Multi-Disciplinary - Potpourri	**W3-H** Multi-Disciplinary - Catastrophes: Vulnerabilities and Responses	**W3-I Symposium:** Show Me the Data!	**W3-J** Helmholtz Alliance ENERGY-TRANS: Future Infrastructures for Meeting Energy Demands. Towards Sustainability and Social Compatibility

1:00-1:15 PM Join us for the an all-day exhibition on the theme of "Risk and Resilience in Art and Cultural Change," Salon III-VI

1:15-2:45 PM	**W4-F Symposium:** Foundational Issues in Risk Analysis II	**W4-G** Cautions in Assessing Risk from Occupational Epidemiology	**W4-H Symposium:** Cumulative Risk Analysis Considerations Related to Evaluating Exposure to Multiple Stressors	**W4-I Symposium:** Using Mechanistic Data to Build Adverse Outcome Pathways for Health Risk Assessment	**W4-J** Communication and Health Issues

2:45-3:00 PM Join us for the an all-day exhibition on the theme of "Risk and Resilience in Art and Cultural Change," Salon III-VI

3:00-4:30 PM	**W5-F** Microbial Dose-Response	**W5-G** Multi-Disciplinary - Ebola II	**W5-H Symposium:** Foundational Issues in Risk Analysis III	**W5-I** Decision Approaches: from Genetically Engineered Plants to HIV	**W5-J** Coverage of Risks in (Social) Media

4:45 PM **T-Shirt Giveaway** - *Registration Area*
Receive a free T-Shirt!

Technical Program
Presenter's name indicated by asterisk (*) if other than first author.

10:30 AM-12:10 PM
Grand Ballroom A

M2-A Symposium: Current Challenges in the Translation and Application of High-Through Put Data into Human Risk Assessment and Chemical Safety Evaluation

Chair: Scott Wesselkamper

10:30 AM   **M2-A.1**

Developing alternative data streams for integration into rapid, 'fit-for-purpose' chemical assessments

Thomas RS
US EPA

10:50 AM   **M2-A.2**

High throughput and computational tools for quantifying the bioactivity, hazard, exposure, and risk of chemicals for safety assessments

Dix DD
Office Science Coordination and Policy

11:10 AM   **M2-A.3**

Transforming human health assessment of environmental chemicals through practical application of alternative data

Lambert JC
US EPA/ORD/NCEA

11:30 AM   **M2-A.4**

Determining the predictive capability of in vitro microphysiological systems to answer critical regulatory questions

Fitzpatrick SC
US Food and Drug Administration, Center for Food Safety & Applied Nutrition

11:50 AM   **M2-A.5**

Addressing uncertainty and variability in 21st century risk assessments

Chiu WA
Texas A&M University

10:30 AM-Noon
Grand Ballroom B

M2-B Roundtable: Examining Intersections of International Development with Defense, Infrastructure and Ecological Risk

Chair: Patrick Murphy

Global development challenges are global challenges. The causes and consequences of economic stagnation, natural disasters, failing infrastructure, epidemics and other natural and man-made emergencies cannot be contained within a countries borders. Refugees, diseases and terrorists radiate from failed, failing and stagnating states. This cafe will initiate interdisciplinary discussion and planning between development risk experts and experts from closely related risk disciplines, focusing first on:
•Security and Defense
•Engineering and Infrastructure
•Ecological Risk Assessment
•Economics and Benefits Analysis
The intended outcome from this effort are plans of action for multiple symposia over the next year, at both domestic and international SRA events that integrate one or more of the other specialty groups with Risk and Development. We invite interested members, especially current and future leaders of other interested specialty groups to attend. We will collaboratively identify draft focus areas for the integrated symposia, potentially including but not limited to:
•Development, Security and Defense - Pre-conflict intervention and post conflict reconstruction
•Development, Engineering and Infrastructure - Adapting the techniques for Energy, Water and Transportation risk assessment and management to the fragile infrastructures of underdeveloped nations.
•Development and Ecological Risk Assessment - Climate change, vulnerable populations, and capacities for mitigation
The group will then break-out into sessions to plan symposia for each of the selected focus areas.

10:30 AM-Noon
Grand Ballroom C

M2-C Symposium: Are Gene Drives the Next Risk Governance Challenge

Chair: Todd Kuiken

10:30 AM   **M2-C.1**

A risk-based regulatory system for genetic modification technologies

Stevens YA, Marchant GE
Arizona State University, College of Law

10:50 AM   **M2-C.2**

Mental models & systems mapping for risk analysis of gene drives

Kuzma J
North Carolina State University

11:10 AM   **M2-C.3**

International perspectives on advances in biotechnology

Dana GV
US Department of State

11:30 AM   **M2-C.4**

Vigilante environmentalism: how new genetic technologies could change how we manage ecosystems

Kuiken T
Woodrow Wilson Center

10:30 AM-Noon
Grand Ballroom DE

M2-D Roundtable: Identifying and Promoting Core Knowledge Risk Management

Chair: Steve Ackerlund
Sponsored by Applied Risk Management Specialty Group

This roundtable initiates an undertaking of the Applied Risk Management Specialty Group to facilitate the transfer of established knowledge on risk management to applied users. Varying perspectives will be shared, discussed and debated on how to identify and promote core knowledge in risk management in ways that engage SRA members, attract more members to SRA, and increase SRA's value to practitioners generally. Defining "core knowledge" as those principles, practices and methodologies that are generally recognized as established and commonly applied, this roundtable seeks to initiate and scope this undertaking by engaging panelists and session attendees around three questions: 1) what kinds of information constitute core knowledge (e.g. lexicon, principles, guidelines, ethics, etc.) supported by discussion drafts and rationale for content inclusion; 2) whether core knowledge varies by discipline (e.g. finance, governance, asset, military, terrorism, etc.); and 3) what is the value case for undertaking this effort and what processes might be used to achieve broad agreement and support within SRA? To ensure active participation by all, each question will be taken in turn, with panelist providing brief prepared statements followed by attendee discussion and debate. Panelists are selected to represent diverse expertise across a broad range of risk management disciplines: terrorism, governance, asset/infrastructure, environment and military.

Participants Include:

Merad M, Dister CJ, Ezell B, Ackerlund WS

10:30 AM-12:10 PM
Grand Ballroom FG

M2-E Engineering and Infrastructure: Advances in Infrastructure Risk Modeling

Chair: Stanley Levinson

10:30 AM   **M2-E.1**

Challenges in modeling future risks using climate data

Staid A, Guikema SD, Quiring SM, Nateghi R
Johns Hopkins University

10:50 AM   **M2-E.2**

Method to represent seismic hazard for spatially distributed infrastructure

Davidson RA, Manzour H, Horspool N, Nozick LK
University of Delaware

11:10 AM   **M2-E.3**

Low probability streamflow outcomes in the mid-Atlantic region

Tonn GL, Guikema SD
Johns Hopkins University, University of Michigan

11:30 AM   **M2-E.4**

Evaluating overtopping risks of reservoir-dam systems based on rare event simulation

Deng Q, Baecher G, Komey A
University of Maryland, College Park

11:50 AM   **M2-E.5**

Adapting Communications for Complex, Interdependent Technological Risks

Zimmerman R
New York University

Technical Program
Presenter's name indicated by asterisk (*) if other than first author.

10:30 AM-Noon
Grand Ballroom H
M2-F Symposium: Current Emerging Microbial Initiatives at the Food Safety and Inspection Service (FSIS)
Co-Chairs: Kerry Dearfield, Janell Kause
Sponsored by: Microbial Risk Analysis Specialty Group

10:30 AM   M2-F.1
FSIS strategies to control STECs through improved sanitary dressing procedures
Bronstein PA
US Department of Agriculture - Food Safety Inspection Service

10:50 AM   M2-F.2
FSIS poultry performance standards: using risk assessment and risk analysis in the decision-making process
Catlin MC
Food Safety and Inspection Service

11:10 AM   M2-F.3
Proposed guidelines for the control of nontyphoidal Salmonella Spp. in beef and pork meat
Golden NJ, Dearfield K
Food Safety and Inspection Service

11:30 AM   M2-F.4
Interagency retail listeria monocytogenes risk assessment: a model for stakeholder engagement, collaboration and outreach
Kause JR
USDA-FSIS

10:30 AM-Noon
Grand Ballroom J
M2-G Weapons of Mass Destruction: Risk and Response
Co-Chairs: Drew Rak, Kara Morgan

10:30 AM   M2-G.1
Black swans, pale men and the game of lists and leverage
Lathrop JF
Decision Strategies, LLC

10:50 AM   M2-G.2
Calculating risks of evacuation to inform decision-making in radiation exposure scenarios
Morgan KM, Daxton E, Triplett C, Kim D, Sanford J
Battelle Memorial Institute

11:10 AM   M2-G.3
Analytic methods for minimum risk nuclear arsenals
Reinhardt JC, Paté-Cornell ME
Stanford Univeristy

11:30 AM   M2-G.4
The role of risk acceptance attitudes in managing a risk to infrastructure systems from terrorist attack
Cha E, Shafieezadeh A, Ellingwood BR
University of Illinois at Urbana-Champaign, Ohio State University, Colorado State University

10:30 AM-12:10 PM
Grand Ballroom K
M2-H Symposium: Advantages and Impacts of Big Data for Food Intake Risk Assessment
Chair: Sandra Hoffman

10:30 AM   M2-H.1
Disruptive arrival of big data to food intake assessment
Canady RA, Simon T
NeutralScience L3C, Ted Simon LLC

10:50 AM   M2-H.2
Benefits and challenges of new data and models
*Hoffmann S, Denbaly M**
USDA Economic Research Service

11:10 AM   M2-H.3
Examining the need and value of data aggregation and sharing toward food exposure measurements: data science modeling, tools and approaches
Aerni SJ, Patel CJ
Pivotal Software, Harvard Medical School

11:30 AM   M2-H.4
Using continuous individual food intake data to improve exposure assessment: PBPK modeling of dietary iodide intake, total goitrogen exposure, and thyroid impacts as a case study
Lewandowski T, Lumen A, Peterson M, Charnley G
Gradient, USFDA, Gradient, HealthRisk Strategies

11:50 AM   M2-H.5
Aggregate exposure to vitamin A from cosmetics and the diet
O'Mahony C, Kelly S, Kosmund K, Tozer S
Creme Global

10:30 AM-Noon
Arlington Ballroom I
M2-I Symposium: Acceptable Risk: A Willing Suspension of Hierarchical Assumptions, Part 1
Chair: Fred Boelter

10:30 AM   M2-I.1
Case study of hunters point: is the outrage about toxins or jobs?
Heckman B
RHP Risk Management Inc.

10:50 AM   M2-I.2
Environmental meetings involving the community: what is meant by acceptable risk?
Fox M
Johns Hopkins University

11:10 AM   M2-I.3
Probabilistic analysis and the implications of black swans when communicating risks
Larrañaga M
Ramboll Environ US Corporation

11:30 AM   M2-I.4
Does banding as an occupational risk communication tool have application to the general public?
O'Reilly MV
ARLS Consultants

10:30 AM-Noon
Arlington Ballroom II
M2-J Symposium: The Role of Knowledge and Experience in Public Perception of Climate Change
Chair: Michael Siegrist

10:30 AM   M2-J.1
The experience of flooding and its influence on climate change risk perceptions
Demski CC, Pidgeon NF, Capstick SB, Sposato RG, Spence A
Cardiff University, UK

10:50 AM   M2-J.2
Knowledge and values shape public perceptions of climate change: a cross-national study
Shi J, Visschers VHM, Siegrist M
ETH Zurich and Institute for Environmental Decisions (IED)

11:10 AM   M2-J.3
The climate-science-communication measurement problem
Kahan DM
Yale University

11:30 AM   M2-J.4
Less smoke, fewer mirrors: decision-aiding to address the risks of climate change
Arvai J, Bessette D, Kenney L, Campbell-Arvai V
University of Michigan

1:30 PM-3:00 PM
Grand Ballroom A
M3-A D3: Doing Dose - Response Differently
Chair: Lynne Habor

1:30 PM **M3-A.1**
Mode of action and meta-regression analysis of the effect of trans fatty acids (TFAs) on LDL-cholesterol
Haber LT, Reichard JF, Vincent MJ, Allen BC, Liska DJ, Dourson ML
TERA, BCA Associates, Biofortis

1:50 PM **M3-A.2**
Population analysis of gastric toxicokinetics of hexavalent chromium in mice and humans
Sasso AF, Leonard J, Schlosser PM
US Environmental Protection Agency

2:10 PM **M3-A.4**
Discarding data overstates risk estimates from exposure to ambient air pollutants
Belzer RB, Lewis RJ
Good Intentions Paving Company, Exxon-Mobil Biomedical Sciences, Inc.

1:30 PM-3:00 PM
Grand Ballroom B
M3-B Joint SRA/SBCA Roundtable: Improving the Link Between Risk Assessment and Economic Analysis
Co-Chairs: Pamela Williams, Stuart Shapiro
Sponsored by: Society for Benefit-Cost Analysis, Society for Risk Analysis

In 2009, the National Research Council published "Science and Decisions: Advancing Risk Assessment," which recommends improvements in the US EPA's approach to risk assessment. The recommendations aim to increase the utility of these assessments, strengthening their link to economic analysis and ultimately to risk management decisions. In particular, they embed the risk assessment in a new risk-based decision-making framework, which involves identifying the problem and possible options for addressing it, conducting related analyses, reviewing the results, and making the decision. The recommendations also encourage improved characterization of a wider range of health and environmental impacts, potentially expanding the types of impacts that can be valued in monetary terms. These recommendations have important implications for the analyses of environmental, health, and safety policies generally, not solely those undertaken by EPA. In this roundtable, we will begin by summarizing the recommendations from "Science and Decisions." We will then consider the progress made since the report was published, including the extent to which the recommendations have been implemented, the ways in which the recommendations could be improved, and the areas where more work is needed. Panelists include members of the committee that drafted "Science and Decisions," current and former government staff involved in implementing its recommendations, and others who work at the intersection of risk assessment and economic analysis.
Participants Include:
Brand K, Finkel A, Gray G, Hammitt JK, Hoffmann S, Paoli G, Robinson LA, Rodricks J

1:30 PM-3:00 PM
Grand Ballroom C
M3-C Presidential Symposium: Comparisons and Perspectives on Risk Assessment Programs
Co-Chairs: Jonathan Wiener, David Cragin

1:30 PM **M3-C.1**
Policy chemistry: comparing the choice of policy instruments for managing chemical risks in the US, Canada, and the EU
Abelkop A, Richards K
Indiana University School of Public and Environmental Affairs

1:50 PM **M3-C.2**
Impact of REACH authorization listings on pharmaceutical manufacturing in the EU
Cragin D, Poepken T, O'Ceallaigh T, Lepore J, Hollick N, McPike S, Thomas A
Merck & Co and Peking University

2:10 PM **M3-C.4**
Evidence based policy making in Europe: Lessons for the new European Commission
Lofstedt R
King's College London

1:30 PM-3:00 PM
Grand Ballroom DE
M3-D Air and Water Quality
Chair: Zoya Banan
Sponsored by ARM Specialty Group

1:30 PM **M3-D.1**
Heterogeneity of emissions exposure risk from hydraulic fracturing in the Marcellus Shale Region of Pennsylvania and implications for permitting policy
Banan Z, Gernand JM
Penn State University

1:50 PM **M3-D.2**
Risk based decision making for fracturing proppant selection
Agrawal S, Gernand JM
Pennsylvania State University

2:10 PM **M3-D.3**
Risky practices and water related disease transmission on Vietnamese small-scale integrated farms
Le QB, Hall DC
University of Calgary

2:30 PM **M3-D.4**
Linking risk perception to behaviors: public responses to air pollution in China
Fan S, Xu J
Tsinghua University and Central University of Finance and Economics, Peking University

1:30 PM-3:00 PM
Grand Ballroom FG
M3-E Symposium: Nanotechnology Risk Governance: Current and Future Approaches to Managing Potential Risks from Emerging Nanomaterials Part 1
Co-Chairs: Christian Beaudrie, Jeremy Gernand

1:30 PM **M3-E.1**
Assessing and managing the risks of chemical substances manufactured as nanoscale materials
Alwood RJ
Environmental Protection Agency

1:50 PM **M3-E.2**
Adapting governance approaches to evolving technologies
Bergeson LB
Bergeson & Campbell, PC

2:10 PM **M3-E.4**
An industry perspective on risk management of nanomaterials
Clancy SF
Evonik Corporation

Vote for your five favorite posters through the App!

1:30 PM-3:00 PM
Grand Ballroom H
M3-F Symposium: Update on Salmonellosis: Why is it Still a Major Public Health Issues and What Value Does Risk Assessment have in Redirecting the Burden?
Co-Chairs: Karen Hoelzer, Jane Van Doren

1:30 PM   **M3-F.1**
Salmonellosis in the European Union - Review of the recent source attribution and risk assessment studies
Sanaa M
French Agency for Food, Environmental and Occupational Health & Safety

1:50 PM   **M3-F.2**
An approach to modelling survival of Salmonella in tree nuts for use in risk assessment
Santillana Farakos SM, Pouillot R
Food and Drug Administration

2:10 PM   **M3-F.3**
Frontiers in quantitative microbial exposure and risk assessment for Salmonella control: applications to managing risk in the dry pet food production chain
Lambertini E, Buchanan RL, Narrod C, Pradhan AK
University of Maryland, College Park

2:30 PM   **M3-F.4**
Salmonella risks pre-harvest and their importance for food safety
Hoelzer K, Eskin S
The Pew Charitable Trusts

1:30 PM-3:10 PM
Grand Ballroom J
M3-G Symposium: Modeling and Validating Attacker/ Defender Games
Chair: Jun Zhuang

1:30 PM   **M3-G.1**
Capacity model for protection of transportation networks
Bier VM, Liu S
University of Wisconsin-Madison

1:50 PM   **M3-G.2**
A framework for assessing the Value of Deterrence (VoD)
John RS, Rosoff H
University of Southern California

2:10 PM   **M3-G.3**
Time-series and intervention modeling of bombing attack threat
Li SY, Zhuang J, Shen SF
Beijing Tsinghua University

2:30 PM   **M3-G.4**
Behavioral minimax regret for security games and its application for UAV Planning
Nguyen T, Yadav A, Fave F, Tambe M, Agmon N, Jain M, Deventer R
University of Southern California, Bar-Ilan University, ShadowView Foundation

2:50 PM   **M3-G.5**
Risk preferences in network interdiction games
Zhang JZ, Zhuang JZ, Behlendorf BB
University at Buffalo, SUNY

1:30 PM-3:00 PM
Grand Ballroom K
M3-H Roundtable: Foundations of Risk Analysis
Chair: Terje Aven

In this roundtable the panelists will discuss some foundational topics of risk analysis, on the basis of a recent document issued on Foundations of Risk analysis (www.sra.org/frasg). The topics include

1) Risk analysis and science
2) The risk concept
3) Risk management principles
4) Uncertainty in risk analysis
5) Confronting deep uncertainties, surprises and the unforeseen
6) Reliability, validity and trustworthiness of risk analysis methods and results (including suggestions of how to make them more trustworthy) and
7) The future of risk analysis: meeting the challenges. Emerging trends.

The idea of this document has been to prepare a paper which reflects on key scientific pillars of risk analysis, the core of our scientific, regulatory and technical field, the elements that unify our professional discipline, with both current and future perspectives.

Participants Include:
Aven T, Renn O, Guikema S, Cox LA, Greenberg M

1:30 PM-3:00 PM
Arlington Ballroom I
M3-I Symposium: Acceptable Risk: A Willing Suspension of Hierarchical Assumptions, Part 2
Chair: Fred Boelter

1:30 PM   **M3-I.1**
Considering non-occupational exposures, stressors, and risks for a Total Worker Health™ approach
Cunningham T
CDC/NIOSH/EID

1:50 PM   **M3-I.2**
Implementing Total Worker Health™: a story of wellness and prevention, behavioral health, and understanding chronic disease
Cunningham Hill M
Johnson & Johnson Health and Wellness Solutions, Inc.

2:10 PM   **M3-I.3**
Lifestyle, chemical, and radiation risks: differences in perception, regulation, and choice
Blackman H
Boise State University

2:30 PM   **M3-I.4**
The NIOSH cumulative risk assessment project: characterizing and communicating both occupational and non-occupational risks
Dotson S
CDC/NIOSH/EID

1:30 PM-3:00 PM
Arlington Ballroom II
M3-J Climate Change Perception and Communication
Co-Chairs: Vivianne Visschers, Ann Bostrom

1:30 PM   **M3-J.1**
Quantifying the public's perceived uncertainty of climate change: its relation to climate change concerns and trust in science
Visschers V, Mueller C, Siegrist M
ETH Zurich, Institute for Environmental Decisions, Consumer Behavior

1:50 PM   **M3-J.2**
Here and now, there and then: examining the interplay of 'departure dates' and spatial distance in climate-risk perception
Rickard LN, Yang ZJ, Schuldt JP
University of Maine; State University of New York at Buffalo; Cornell University

2:10 PM   **M3-J.3**
Informing climate change risk management and decision support in New Orleans: a new value-informed approach
Bessette DL, Cwik BP, Mayer LA, Tuana N
Pennsylvania State University

2:30 PM   **M3-J.4**
What will adaptation cost
Goodhue C, Kieval R, Stiller H, Wiley P, McDonough B
Eastern Research Group, Inc. and NOAA

3:30 PM-5:10 PM
Grand Ballroom A

M4-A Symposium: Addressing Model Uncertainty in Dose-Response Analysis for Chemical Risk Assessment
Chair: Allen Davis

3:30 PM   **M4-A.1**
Continuous toxicological dose-response relationships are pretty homogeneous
Setzer RW, Slob W
National Center for Computational Toxicology, US Environmental Protection Agency, National Institute of Public Health and the Environment (RIVM), The Netherlands

3:50 PM   **M4-A.2**
Quantile benchmark dose estimation for continuous endpoints
Wheeler MW, Shao K, Bailer AJ
NIOSH

4:10 PM   **M4-A.3**
Nonparametric Bayesian approach to benchmark dose estimation
Kopylev L, Spassova M, Fox J, White P
Environmental Protection Agency

4:30 PM   **M4-A.4**
Model averaging: a valuable tool being underestimated
Shao K
Indiana University

4:50 PM   **M4-A.5**
Bayesian model averaging in the estimation of arsenic-associated urinary cancer risks
Allen BC, Mendez WM, Davis JA, Gift JS
US Environmental Protection Agency

3:30 PM-5:10 PM
Grand Ballroom B

M4-B Symposium: Quantifying Armed Conflict and Social Unrest
Chair: Anthony Barrett
Co-sponsored by: Society for Risk Analysis

3:30 PM   **M4-B.1**
Forecasting armed conflict: risks and interventions
Gilmore EA, Hegre H, Buhaug H, Calvin K, Nordkvelle J, Waldhoff S
University of Maryland, Peace Research Institute Oslo, Joint Global Change Research Institute

3:50 PM   **M4-B.2**
Risk and policy analysis of nuclear war
Baum SD, Barrett AM
Global Catastrophic Risk Institute

4:10 PM   **M4-B.3**
Modeling risk preferences in attacker-defender games
Zhang J, Madasseri Payyappalli V, Zhuang J, Jose V
University at Buffalo, SUNY

4:30 PM   **M4-B.4**
Benefit cost analysis in a strategic and risky environment
Alexeev A, Krutilla K
Indiana Uinversity

4:50 PM   **M4-B.5**
Mental models for evaluating radicalization: a complex systems approach for ideological diversity and rapid ideological change
Schweizer V
University of Waterloo

3:30 PM-5:10 PM
Grand Ballroom C

M4-C Symposium: Human Volunteer Inhalation Exposure Studies: Informing Risk Assessments and Policy
Co-Chairs: John Norman, Sabine Lange

3:30 PM   **M4-C.1**
Ethical and legal requirements for human subjects in controlled exposure research
Schonfeld TS
US Environmental Protection Agency

3:50 PM   **M4-C.2**
Biological outcomes and significance of controlled human inhalation studies
Lange SS
Texas Commission on Environmental Quality

4:10 PM   **M4-C.3**
Inherent variability in exposure studies: study design and subject limitations
Diaz-Sanchez D
US Environmental Protection Agency

4:30 PM   **M4-C.4**
Environmental human challenge studies: understanding uncertainties
Cascio WE
US Environmental Protection Agency

4:50 PM   **M4-C.5**
Extrapolation of controlled human study results to the US population
Goodman JE, Lynch HN
Gradient

3:30 PM-5:00 PM
Grand Ballroom DE

M4-D Perceptions of Risk Versus Actual Risk in Ecological Assessments
Chair: Charlie Menzie

3:30 PM   **M4-D.1**
What does it mean to be an expert? Studying the judgments of emergency managers in the context of flood-related risks
Arvai J, Redmond K, Roberts P, Wernstedt K, Wilson R
University of Michigan

3:50 PM   **M4-D.2**
What you see is not (necessarily) all there is: evaluating the data quality of causal evidence for environmental and ecological pathways
Kashuba RO, Palmquist KR, Menzie CA
Exponent, Inc.

4:10 PM   **M4-D.3**
Assessing the risks of Asian carp presence in the Chicago area waterway system: a probabilistic interpretation of environmental DNA monitoring results
Schultz MT, Cerco CF, Skahill BE, Lance RF, DiJoseph PK, Smith DL, Guilfoyle MP
US Army Corps of Engineers

4:30 PM   **M4-D.4**
Probabilistic framework for aquatic invasive species eDNA monitoring & inference
Song JS, Small MJ
Carnegie Mellon University

3:30 PM-5:00 PM
Grand Ballroom FG

M4-E Symposium: Nanotechnology Risk Governance: Current and Future Approaches to Managing Potential Risks from Emerging Nanomaterials Part 2
Co-Chairs: Christian Beaudrie, Jeremy Germand

3:30 PM   **M4-E.1**
Incorporating alternative testing strategies into regulatory decision making
Ong KJ, Shatkin JA
Vireo Advisors, LLC

3:50 PM   **M4-E.2**
Promises and challenges for the adoption of Alternative Testing Strategies (ATS) methods within regulatory frameworks
Malloy TF, Beryt E
University of California, Los Angeles

4:10 PM   **M4-E.3**
SUNDS, a multi-criteria decision analysis methodology for nanotechnology sustainability assessment
Zabeo A, Semenzin E, Hristozov D, Subramanian V, Marcomini A
University Ca' Foscari Venice

4:30 PM   **M4-E.4**
Risk governance: an integrating framework for oversight of nanotechnology
Tinkle SS
Science and Technology Policy Institute

3:30 PM-5:00 PM

Grand Ballroom H

M4-F Multi-Disciplinary - Historical and Contemporary Applications - I

Co-Chairs: Thomas Webler, Andreas Klinke

3:30 PM   M4-F.1
Risk, science and democracy
Dietz, TT
Michigan State University

3:50 PM   M4-F.2
Metamorphoses: changes in the practice and use of risk analysis
Goble RL
Clark University

4:10 PM   M4-F.3
Social amplification of risk: progress and new issues
Kasperson RE
Clark University

4:30 PM   M4-F.4
The influence of exposure to an article retraction on risk perceptions of genetically modified food
Sarathchandra D, McCright A
University of Idaho

> **Vote for your five favorite posters through the App!**

3:30 PM-5:00 PM

Grand Ballroom J

M4-G Symposium: Corporate Decison-Making Based on Occupational Risk Assessment

Co-Chairs: Paul Esposito, Dennis Paustenbach

3:30 PM   M4-G.1
Methodology for systemizing risk reductions using the hierarchy of controls
Esposito, PE
ASSE Risk Assessment Institute

3:50 PM   M4-G.2
Finding the hidden hazards
Esposito PA, Daigle KJ
American Society of Safety Engineers

4:10 PM   M4-G.3
Using perception surveys to evaluate risk decisions
Esposito PA, Daigle KJ, Woodhull D
American Society of Safety Engineers

4:30 PM   M4-G.4
Risk assessment output metrics for corporate accountability
Esposito AP, Kohlmeyer J
ASSE Risk Assessment Institute

3:30 PM-5:10 PM

Grand Ballroom K

M4-H Symposium: Foundational Issues in Risk Analysis I: Risk Assessments, Uncertainties and the Unforeseen

Chair: Terje Aven

3:30 PM   M4-H.1
Assumptions in quantitative risk assessments: when explicit and when tacit?
Aven T, Flage R
University of Stavanger

3:50 PM   M4-H.2
Treatments of unforeseen events in probabilistic risk analysis
Ayyub B
University of Maryland, College Park

4:10 PM   M4-H.3
Potential uses and limitations of the NUSAP notational scheme when treating uncertainty in semi-quantitative risk assessment
Berner CL, Flage R
University of Stavanger

4:30 PM   M4-H.4
Improved hazard identification in major accident prevention based on evaluation of system characteristics
Røed W
University of Stavanger, Norway

4:50 PM   M4-H.5
Embracing the principles of sustainability science in risk assessment and management
Muralidharan A, Nateghi R, Yu DJ
Purdue University, School of Civil Engineering and Department of Political Science

3:30 PM-5:10 PM

Arlington Ballroom I

M4-I Symposium: Risk Based Product Evaluation: Approaches and Stakeholder Perspectives

Chair: Brett Howard

3:30 PM   M4-I.1
A case study: a review of 7-chemicals using prominent hazard screening tools suggest opportunities for improving performance expections
Howard B, Mason A, Spencer P, Panko J, Kingsbury T
American Chemistry Council

3:50 PM   M4-I.2
Integrating exposure information into a hazard-based screening tool for selection of chemical alternatives
Arnold S, Thompson G, Kennedy K, Landenberg B, Mason A
The Dow Chemical Company

4:10 PM   M4-I.3
Risk assessment: alignment and harmonization in sustainability
Griffiths A
UL Environment

4:30 PM   M4-I.4
Risk-based framework and case study for safer chemical alternatives in institutional procurement
Siddhanti S, Dilwali KM, Bhattacharya B, Tickner JA
EnDyna Inc and Integrative Sciences LLC and UMass Lowell

4:50 PM   M4-I.5
Cleaning product ingredient safety initiative: exposure estimates for cleaning product ingredients by chemical category and functional use class
Williams ES, Ciarlo M, Pacelli C, Greggs B, DeLeo P
Baylor University

3:30 PM-5:10 PM

Arlington Ballroom II

M4-J Symposium: Public Perceptions of Fracking Risks: US and UK Perspectives

Chair: Nick Pidgeon

3:30 PM   M4-J.1
Public understanding of fracking as an environmental hazard in the US
Harthorn BH, Satterfield T, Collins MB, Copeland L
University of California at Santa Barbara

3:50 PM   M4-J.2
Nuanced differences in perceptions of 'fracking' between the UK and US
Evensen D, Stedman R, O'Hara S
Oberlin College

4:10 PM   M4-J.3
Public deliberation of 'fracking' for shale gas and oil in Britain
Pidgeon NF, Thomas MJ, Harthorn B, Partridge T
Cardiff University and University of California Santa Barbara

4:30 PM   M4-J.4
Public deliberation of hydraulic fracturing in the US
Partridge T, Harthorn BH, Pidgeon N, Thomas M
University of California Santa Barbara

4:50 PM   M4-J.5
Comparing public understanding of fracking risks in the USA and UK social media
Hasell AH, Hodges HE
University of California, Santa Barbara

Air and Worker Quality

P.2 Quantifying the contribution of individual emissions sources to PM2.5 social costs for designing cost-effective control strategies
Heo J, Adams PJ, Gao HO
Cornell University and Carnegie Mellon University

P.3 Profiling adapters and mitigators: an empirical study on risk perceptions and behavioral responses toward air pollution in Beijing
Tan H, Xu J
Southwestern University of Finance and Economics

Decision Analysis: Policy, Probabilistic, Behavioral and Big Data Analysis

P.5 Risk-based maritime security risk operations
Kuck JW, Howard PM, Taylor J*
ABS Group

P.6 Comparison of a site risk assessment conducted using EPA Superfund Risk Assessment Guidelines vs. LDEQ RECAP methods
Greenberg GI, Beyer LA
Gradient

P.7 Risk management strategy regarding nanotechnologies within the EDF Group
Tossa P, Delon C, Brugidou M, Noel D, Cabanes PA
Electricity of France (EDF)

P.8 Addressing affordability issues in the federal flood insurance
Xian SY, Lin N
Princeton University

P.9 Managing Coastal flood risks: a Structured Decision Making (SDM) approach to mitigating the impacts of sea-level rise in Vancouver, British Columbia
Beaudrie CEH, Lyle T, Long G, Badelt B
Compass Resource Management Ltd, Canada, Ebbwater Consulting, Canada, City of Vancouver, British Columbia

P.10 Using means objectives to present risk information
Huynh CH, Simon J
California State Polytechnic, Pomona, Naval Postgraduate School

P.11 Measuring individual differences in near-miss appraisals
Cui J, Rosoff H, John RS
University of Southern California

P.13 The Goldilocks fallacy
Vanden Bosch P
Marymount University

P.14 Verbal decision analysis of risk related causal factors in operator errors
Yemelyanov AM, Baev S, Yemelyanov AA, Tikhomirov NP
GSW State University, Plekhanov Russian University of Economics

P.15 Playing with fire: assessing the effects of risk interdependency and social norms on homeowners' wildfire mitigation decisions using choice experiments
Brenkert-Smith H, Dickinson K, Flores N
University of Colorado

P.16 Decision making under risk and ambiguity
Wang Y
Georgia Institute of Technology

P.17 Is it necessary to invest in information technology security countermeasures? A theoretical model of decision making based on risk mitigation of banking phishing
Nsiempba JJ, De Marcellis-Warin N, Fernandez J
École Polytechnique de Montréal

P.18 Decision-analytical approach to managing harmful algal blooms: methodology and case study
Radomyski A, Pang C, Subramanian V, Nadimi M, Barba D, Linkov I
Caí Foscari University of Venice, Italy

P.19 Incorporating decision points in models of risk scenarios
Treeman NM, Mosleh A
University of Maryland College Park, University of California Los Angeles

P.20 Toward risk-informed regulation in healthcare using socio-technical risk analysis
Maddi A, Pence J, Mohagegh Z
University of Illinois Urbana Champaign

P.21 Beta bayesian kernel methods for the prediction of global supply chain disruptions
Baroud H, Francis R, Barker K
University of Oklahoma and George Washington University

P.23 Application of Benford's Law and Zipf's Law in the development of data driven decision support for environmental enforcement
Hatami P, Mitchell J, Gibbs C, Rivers L
Michigan State University

P.24 Adverse outcome pathways for effects associated with exposure to inorganic arsenic
Clewell HJ, Greene TB, Gentry PR
Institute for Chemical Safety Sciences, The Hamner Institutes for Health Sciences, Ramboll Environ, Monroe, LA

P.26 Incorporating ecosystem services into a conceptual model of cumulative risk assessment: cardiovascular disease as a case study
Menzie C, Kashuba R, Law S
Exponent Inc.

Dose-Response

P.27 Dose response curves derived from clinical ozone exposures can inform public policy
Lange SS, Tao G, Rhomberg LR, Goodman JE, Dourson ML, Honeycutt ME
Texas Commission on Environmental Quality, Gradient, Toxicology Excellence for Risk Assessment

P.28 Evaluating dose-additivity for dioxin-like compounds using a combined component-chemical/mixture data approach
Swartout JC
US Environmental Protection Agency

P.29 Web-based Bayesian benchmark dose estimation system
Shao K, Shapiro A
Indiana University Bloomington, Independent Consultant

P.31 Problem formulation efforts in the IRIS Program
Subramaniam R, Birchfield N, Cooper G, Fite K, Flowers L, Li Z, Jones S, Rieth S, Starkey C, Cogliano V
US Environmental Protection Agency

P.32 Benzo(a)pyrene [B(a)P]-induced colon tumorigenesis is enhanced by Western diet in the PIRC rat model
Harris KL, Pulliam SR, Niaz MS, Okoro E, Gou Z, Washington MK, Adunyah SE, Ramesh A
Meharry Medical College and Vanderbilt-Ingram Cancer Center

P.33 Characterizing determinants of risk: concentration, duration, and timing of exposure
Woodall GM, Hotchkiss AK, Makris SL, Jarabek AM*, Sams RL, Davis JA, Schlosser PM, Lin YS
US Environmental Protection Agency

P.34 Development of the dose-response relationship for human Toxoplasma gondii infection associated with meat consumption
Guo M, Buchanan RL, Dubey JP, Hill DE, Gamble HR, Jones JL, Pradhan AK
University of Maryland, Agricultural Research Service, US Department of Agriculture, National Academy of Science, Centers for Disease Control and Prevention

P.35 A dose response model for the Mycobacterium avium complex that takes into account recent developments in taxonomy and epidemiology for use in quantitative microbial risk assessment models
Hamilton KH, Haas CN
Drexel University

P.36 Predicting a change in newborn's birth weight based on maternal exposures to lead
Lynch MTK, Brown LPM
Abt Associates

P.37 From literature search to evidence integration
Henning CC, Turley AT
ICF International

P.39 Development of an age dependent dose response model for western, eastern and Venezuelan encephalitis viruses
Mraz AL, Weir MH, Nappier SP, Haas CN
Temple University

P.40 Reviewing evidence of time-dependent toxicities of organic and inorganic mercury in the developing brain
Pletz J, Tennekes HA, Sánchez-Bayo F
Experimental Toxicology Services (ETS), Nederland, The University of Sydney

P.41 Characterization and application of high-throughput platform-based quantitative screening estimates
Wesselkamper SC, Zhao QJ, Lambert JC
US Environmental Protection Agency, National Center for Environmental Assessment

P.42 Cumulative risk assessment of methyl yellow residues in food
Huang YW, Wu KY
National Taiwan University

P.43 Food safety assessment on butter yellow, 4-dimethylaminoazobenzene
Chiang SY, Huang YW, Wu KY
China Medical University, Taiwan

P.44 Impact of statins use and air pollution on stroke among diabetes mellitus patients
Ho WC, Wu TT, Lin MH, Fan KC, Lin YS, Chen PC, Wu TN, Sung FC, Lin RS
China Medical University

P.45 Statin use and age-specific risk of cancer in patients with hypertension
Chou YJ, Ho WC, Tsan YT, Wu TT, Lin MH, Chan WC, Chen PC, Wu TN, Sung FC, Lin RS
China Medical University

Ecological Risk Assessment

P.49 Cumulative risk assessment of pesticides in the Taiwan population
Chen YH, Wu CH, Wu KY
National Taiwan University

Economics and Benefits Assessment

P.53 Risk and insurance demand
Seog SH
Seoul National University

P.54 What drives economic contagion? Findings from a borrower-lender game
Welburn J
University of Wisconsin - Madison

P.55 Efficient food standards for radioceasium based on cost-benefit analysis of the regulation
Oka T
Fukui Prefectural University

P.56 Modeling the economic cost of non-fatal injuries from terrorist attacks
Heatwole NT
University of Southern California

P.57 Achievement of a good balance between the enhancement of risk reduction and production ñ An economic experiment approach
Makino R, Akai K, Takeshita J
AIST

P.58 Advancing Methods for Benefits Analysis
Bateson TF, Blessinger T, Subramaniam R, Axelrad DA, Dockins C
US Environmental Protection Agency

P.59 Benefit analysis of vehicle crash imminent braking systems for bicyclist fatality reduction
Good DH, Chien S, Li L, Christopher L, Zheng J, Krutilla K, Tian R, Chen Y
Indiana University, Indiana University - Purdue University Indianapolis

P.61 The social and economic effects of wage violations: estimates for California and New York
Forsell T, Haverstick K, Nadeau L
Eastern Research Group, Inc. (ERG)

Emerging Nanoscale Materials

P.63 Release of silver nanoparticles from nanocomposite water treatment membranes: an assessment of potential environmental exposures across the product's life cycle
Rice JR, Wiesner M
Duke University

P.64 Nanoinformatics: advances, applications, and assessing the continuing challenge of uncertainty
Gernand JM
Penn State University

Engineering and Infrastructure

P.65 Socioeconomic impact analysis in critical infrastructure failure and hazardous site disasters
Iuliani L, de Marcellis-Warin N, Galbraith J
École Polytechnique de Montréal

P.66 A stakeholder-based survey for assessing the viability of a water biofilter concept in the Philippines
Santos JR, Latayan JS, Pagsuyoin SA, Srija S
George Washington University

P.67 Assessing terrorist threats for energy systems by utilizing historical data and expert judgments
Sinka D
ENCONET

P.68 Researching engineering causes in 2003 Boumerdes-Algiers (Algeria) earthquake disaster
Benouar D
USTHB

P.69 Triple bottom line modeling of green storm water infrastructure - step 1 environmental benefits
Weir MH
Temple University

P.70 Building models and tools for national infrastructure flood risk assessment
Pant R, Hall JW, Thacker S, Barr S, Alderson D, Lamb R
University of Oxford

P.71 Implementation of soot production models for fire simulations in CFD Tools
Mariño OA, Muñoz F
Universidad de los Andes

Exposure Assessment

P.72 Comparison of VOC drinking water contaminant levels in New Jersey to regulatory and human-health benchmarks
Williams PRD
E Risk Sciences, LLP

P.73 State-level innovations in the assessment of drinking water contaminants of emerging concern
Greene CW, Goeden HM
Minnesota Department of Health

P.74 The impact of rodent reflex bradypnea on human health risk assessments of inhaled irritants
Whalan JE, Pauluhn J
US Environmental Protection Agency

P.75 Estimation of distribution of chicken meat consumption in Canadian populations
Nguyen LB, Smith M
Health Canada

P.76 Assessing the health risks of gossypol in the Taiwanese population
Hsing HH, Chuang YC, Wu C, Wu KY
Institute of Occupational Medicine and Industrial Hygiene, National Taiwan University

P.77 Progress in high throughput exposure assessment for prioritizing human exposure to environmental chemicals
Setzer RW, Wambaugh JF, Isaacs KK
US Environmental Protection Agency

P.81 Using a toxicological framework for chemical prioritization from children's safe product act data
Smith MN, Faustman EM, Grice J
University of Washington

P.82 The risk assessment of pesticide residues in vegetables and fruits in Taiwan: carbofuran, chlorothalonil, dimethoate, methamidophos, terbufos
Chen YJ, Chen YH, Wu C, Wu KY
Institute of Occupational Medicine and Industrial Hygiene, National Taiwan University

P.83 Comparison of Bayesian and frequentist inference in probabilistic exposure assessment of dietary intake from pesticide residues survey with left-censored data
Chuang YC, Wu KY
National Taiwan University

P.84 Oral bioaccessibility of nickel and cobalt from metal alloy emissions in soil and dust
Verwiel AH, Proctor DP
ToxStrategies, Inc.

P.85 Chemical risk analysis and management in King Saud University Laboratories and Stores, Riyadh, Saudi Arabia. a case study
Shereif M
Associate Professor, Dept. of Chemistry, College of Science, King saud University

Foundations of Risk Analysis

P.86 Assessment of the explosion characteristics of dust clouds: standards versus reality
Vizcaya DM, Amín M, Pinilla A, Muñoz F
Universidad de los Andes

P.89 The concept of unacceptable risk in EPA regulatory policies
Farber G
US EPA

Learning from Experience

P.90 Discovery of thresholds of nursing accidents by analysis of open data
Maeda Y, Marui R
Shizuoka Univeristy, Japan Post Insurance Systems Solutions

P.91 Why qualitative research is so important for risk analysis in Latin America?
Padlog MPM
University of Guadalajara

P.92 U.S. EPA provisional peer-reviewed toxicity value and community site specific and regulatory support program
Shannon T, Gatchett A, Zhao QJ, Kaiser JP, Phillips L, Woodall G
US Environmental Protection Agency, National Center for Environmental Assessment

P.94 Poker, beer, and zombies: the application of adult learning theory to teach risk management to undergraduates
Spicer KE
Murray State University

Methods and Practices in Health and Environmental Issues

P.95 US EPA human health research on community and site-specific risk program
Gatchett A, Wright JM, Segal D, Shannon T
US Environmental Protection Agency, National Center for Environmental Assessment

P.96 Application of Mental Modeling Technology™ - with Synthetic Interviews™ to support stakeholder engagement through artificial intelligence products
Butte G, Kovacs D, Ketchum C, Pribanic V, Thorne S
Decision Partners; MedRespond

P.97 4-N-Nitrosomethylamino-1-(3-pyridyl)-1-butanone (NNK) and N-Nitrosonornicotine (NNN): risk assessment of Two Tobacco-Specific Nitrosamines (TSNAs)
Fiebelkorn SA, Cunningham FH, Dillon D, Meredith C
British American Tobacco, Group Research and Development, Southampton, UK

P.98 Indoor environmental and air quality characteristics, prior health conditions, and building-related symptoms
Lukcso D, Guidotti TL, Franklin DE, Burt A
Medical Advisory Services, Building Health Sciences

Microbial Risk Analysis

P.100 Use of a quantitative microbial risk assessment model to estimate exposure to campylobacter from consumption of chicken in the United States
Kang D, Eifert J
Virginia Tech

P.101 Development of a pre-harvest system model to understand the ecology of E. coli O157:H7 in leafy greens production
Mishra A, Pradhan AK
University of Maryland, College Park

P.102 A Bayesian approach to the estimation of Salmonella growth in raw chicken meat
Nguyen L
Health Canada

P.103 Modeling of environmental and meteorological risk factors for contamination by foodborne pathogens in produce farms
Pang H, Lambertini E, Pradhan AK
University of Maryland

P.104 Prevalence, isolation, and genetic characterization of toxoplasma gondii in chicken from Amish Community
Ying YQ, Guo M, Dubey JP, Pradhan AK
Department of Nutrition and Food Science, Center for Food Safety and Security Systems, University of Maryland, Animal Parasitic Diseases Laboratory, Agricultural Research Service

Models, Methods, Outputs

P.106 A fuzzy linear programming model for optimal allocation of health workers in a medical facility under crisis conditions
Yu KDS, Tan RR, Aviso KB, Promentilla MAB, Santos JR
De La Salle University

P.107 Stochastic input-output analysis and extensions for impact analysis: a United States case study
Ali J, Santos JR
George Washington University

P.108 Mental models of indoor air quality: does anybody believe the research?
Hamilton M, Rackes A, Gurian PL, Waring MS
Drexel University

P.109 Snow avalanches risk in North India and role of GIS/RS and ICT in avalanche management
Walia AB
Centre for Disaster Management Lal Bahadur Shastri National Academy of Administration

Multi-Disciplinary

P.110 Human and ecological risk assessment of Indiana University golf course
Cains MG, McFetridge E, Winter A, Duan Y
Indiana University

P.111 An iterative and multidisciplinary framework for determining read-across chemical surrogates
Rice JW, Ritter HC, Kneeland JM, Zhang J, Butler C, Noble AE
Gradient

P.112 Apportioning multimedia exposure and risk across human and ecological receptors
Richmond-Bryant J, Lorber M, Price PS, Wright JM, Segal D, Gatchett A, Jarabek AM
US Environmental Protection Agency

P.113 Degradation products as read-across surrogates for hazard assessment of readily degradable substances
Ritter HC, Pizzurro DM, Lunsman TD
Gradient

P.114 Human health risk assessment: contemporary characterizations and challenges
Vandenberg JJ, Jarabek AM, D'Amico L, Johnson M, Shams D, Bland N, Avery J
Government

Vote for your

five favorite posters

through the App!

Multi-Disciplinary: Nature and Weight of Evidence

Occupational

P.117 Health risk assessment for exposure to photoresists in semiconductor manufacturing industries
Huang SZ, Wu KY
National Taiwan University

P.118 Using pharmacokinetic data to replace default adjustment factors in assessing risk from non-clinical exposures to pharmaceuticals
Willis AM, Ovesen J, Reichard J, Sandhu R, Maier A
University of Cincinnati, Toxicology Excellence for Risk Assessment, SafeDose, Ltd.

P.119 An analysis of violations of the OSHA regulatory standard on benzene
Williams PRD
E Risk Sciences, LLP

P.120 Chicago Transit Authority train noise exposure
Phan LT, Jones RM
University of Illinois at Chicago

P.122 What happened to the Acute Exposure Guideline Level (AEGL) program??
Fensterheim R, Choi H, Strother D, Jaques A
RegNet Environmental Service; Toxsolve

Potpourri

P.123 The development of a heat wave vulnerability index for Osaka, Japan
Macnee RGD, Tokai A
Osaka University

Risk Communication

P.125 Qualitative interviews with science and risk communication trainers about communication goals
Besley JC, Dudo AD, Yuan S
Michigan State University

P.127 A valid scale of past experiences for tornado risks
Demuth JL
NCAR and Colorado State University

P.128 Launching a new product in a buzzing world: the Apple Watch's reputation at risk
Digoin G, de Marcellis-Warin N, Warin T
Ecole Polytechnique de Montreal

P.129 The challenge of communicating the risk of inaction: linking causal attribution to biased information processing
Dixon GN
Washington State University

P.130 Protecting lives or promoting risk? Hurricane Sandy survivors' perceptions of severe weather communication
Eosco GM, Rickard LN, Scherer CW, Haase D
ERG, University of Maine, Cornell University, SUNY-ESF

P.131 Should society be compensated for the risks imposed by climate change?
Gutierrez VV, Cifuentes LA
Universidad Diego Portales and Pontificia Universidad Católica de Chile

P.132 Who accept using Fukushima produce at school lunch and why?
Hiromi H, Iwabuchi M, Kumagai Y, Sekizaki T
The University of Tokyo

P.133 Measurement of the thresholds of fear for probabilistic earthquake forecasting and examining the effects by communication methods and demographic factors in Japan
Hirota S, Oki S
Tokyo City University, Keio University

P.134 The paradox of risk communication: people might fear something even though it is described as safe, except people with high numeracy
Ikawa M, Kusumi T
Kyoto University

P.135 EPA's Risk Assessment Training and Experience Program (RATE): a critical tool for advancing national and international collaboration and harmonization of risk assessment
Kadry AM, Walsh D, Sams R
National Center for Environmental Assessment, Office of Research and Development, US Environmental Protection Agency

P.137 How was a health risk related news reported in Taiwan? A pilot analysis of news reports on ractopamine-containing beef imported from the United States
Lu EH, Wu KY
Institute of Occupational Medicine and Industrial Hygiene, College of Public Health, National Taiwan University, Taiwan

P.138 Risk perception on EMF health effects of pregnant women in Japan
Ohkubo C
Japan EMF Information Center

P.139 The proof is in the picture: exploring the influence of visual type on hurricane risk perception
Rickard LN, Eosco GM, Scherer CW
University of Maine; ERG; Cornell University

P.140 Current information needs and preferred communication channels in municipalities affected by the Fukushima nuclear accident
Sato A
United Nations University, Institute for the Advanced Study of Sustainability

P.141 Analyzing the discourse of trust in post-spill Charleston through local newspapers
Song H
Cornell University

P.142 A longitudinal study of electronic cigarette use among college students
Trumbo CW, Kim SJ, Harper R
Colorado State University

P.143 Who trusts the government? The relationships between trust in sources of information, risk perception and disaster preparedness in Canada
Yong AG, Beaudry M, Lemyre L, Pinsent C, Dugas T, Krewski D
University of Ottawa

P.144 Foresight tools for responding to cascading effects in a crisis
Sellke P
Dialogik

P.145 'Weight-of-Evidence' risk messages about Genetically Modified (GM) foods: persuasive effects and motivated reasoning
Vianna B, Clarke CE
George Mason University

P.147 Understanding of risk and media literacy
Aoyagi M
National Institute for Environmental Studies

P.148 Risk assessment on the legibility of the prescriptions by medical practitioners in Quezon City, Philippines
Mallare ANLB, Sanchez NADG, Tolentino RMS, Resurreccion JZ
University of the Philippines, St. Luke's Medical Center

P.149 Nuclear energy in the media: examining how Fukushima influenced debates over the future of nuclear
Bell MZ, Yang ZJ
State University of New York at Buffalo

P.151 Proposal for a constructivist model of "communication-uncertainty" and a typology according to the nature of uncertainty
Camin JM
Université Michel de Montaigne Bordeaux 3

P.152 Communicating risk in disaster risk management systems-a study based on developing and utilizing national risk and vulnerability assessments undertaken in Sweden
Lin L
Lund University

P.153 Risk perception in user-centered product design
Seligsohn EN, Wang Y
Georgia Institute of Technology

Risk, Policy and Law

P.155 The policies and politics of science education: the environmental Literacy Improvement Act
Herovic E
University of Kentucky

P.156 An analysis of Japanese companies' litigations against trade secret misappropriation by insiders
Kazuko T
Waseda University

P.158 New breeding techniques: the risks of innovation versus the inadequacy of regulation
Anyshchenko A, Xiang W
University of Copenhagen

P.159 Wind turbine noise and health: findings of an expert panel
Guidotti TL
Panel on Wind Turbine Noise & Health, Council of Canadian Academies

P.161 Resilience: concept and application to energy transformation
Renn O, Dreyer M
University of Stuttgart

Security and Defense

P.163 Representing uncertainties in economic consequences of multiple hazards
Chatterjee S, Prager F, Chen Z, Rose A
Pacific Northwest National Laboratory

P.165 Risk-informed strategic decision making; adapting to meet new realities
Rouse JF
Joint Staff, Arete Associates

P.167 Hazard assessment of selected flame retardant chemicals of importance to national defense
Rak A, Vogel CM, Bass N
Noblis Inc., US Army Public Health Command

P.168 Human factor trust framework within holistic cyber security risk assessment
Cains MG, Henshel D, Hoffman B, Oltramari A
Indiana University, Army Research Labs, Carnegie Mellon University

P.170 Framing risk assessment of complex systems
Henshel DH, Cains MG, Hoffman B
Indiana University and Army Research Laboratory

P.171 When the presidential candidate is no difference from ordinary people: revisiting the 'weakest link' in the cyber security chain
Nguyen KD, Rosoff H, John RS
University of Southern California

Works-In-Progress

P.172 Life-cycle assessment of dredged-sediment management alternatives
Bates ME, Fox-Lent C, Seymour L, Wender BA, Bridges TS, Linkov I
US Army Corps of Engineers, Massachusetts Institute of Technology, Arizona State University

P.173 Balancing research and funding using value of information and portfolio tools for nanomaterial risk classification
Bates ME, Keisler JM, Zussblatt NP, Plourde KJ, Wender BA, Linkov I
US Army Corps of Engineers, University of Massachusetts Boston, University of California Santa Barbara, Arizona State University

P.174 Multi-pollutant health risk assessment for industrial sectors in Canada
Jessiman B, Colas G, Dinu T, Hancock-Chen T, Judek S, Lyrette N, Raymond P, Willey JB*
Health Canada

P.175 Evaluation of risk based microbiological criteria for Campylobacter in broiler carcasses in Belgium using TRiMiCri
Seliviorstow T, Uyttendaele M, De Zutter L, Nauta MJ*
Ghent University, Belgium, Technical University of Denmark

P.176 Self-participation in desertification: a study on risk perception and coping behaviors
Zhou Y, Song Y, Tian J
Peking University, Carnegie Mellon University

P.177 Alaska specific calculator tool for addressing risk based human-health cleanup levels
Galloway LD, Wu T, Dolislager FD, Stewart DJ
University of Tennessee, Knoxville, State of Alaska DEC Contaminated Sites

P.178 Forensic investigation style of an unexpected large scale urban disaster: the November 10, 2001 Algiers floods and debris flow
Benouar D, Zelloum H, El Hadj F
Universite USTHB

P.179 Seeing is believing?-An examination of perceptions of local weather conditions and climate change among residents in the U.S. Gulf Coast
Shao W, Goidel RK
Auburn University at Montgomery

P.180 Key elements for judging the quality of a risk assessment
Fenner-Crisp PA, Dellarco VL
Independent Consultant, US Environmental Protection Agency (Retired)

P.181 Techno-economic feasibility of desalination technology for agriculture
Welle P, Mauter M
Carnegie Mellon University

P.182 How much risks of GM issue has been told at Chinese newspapers? Comparative analysis of national and local newspaper coverage of GM issue in China, 2000-2014
Zhang X
The University of Tokyo, GSII, Graduate School of Interdisciplinary Information Studies

P.183 Practical usage of regional air monitoring to evaluate community-level chemical release exposures
Robinson HJ
Ramboll Environ

P.184 After the flood: risk perceptions and management preferences following the YYC flood of 2013
Tanner A, Arvai J
University of Calgary

P.185 Expert panel review of the carcinogenic potential of the herbicide glyphosate
Williams GM, Sorahan TM, Aardema MJ, Acquavella J, Berry CL, Brusick DJ, Burns M, Viana de Camargo JL, Garabrant DH, Greim KL, Kirkland D, Marsh G, Solomon K, Weed D, Roberts AHA
New York Medical College

P.186 Identification and quantification of cumulative factors that increase environmental exposures and impacts
Huang H, Barzyk TM
ORISE at EPA

P.187 Risks to U.S. wastewater workers during ebola outbreaks: a bayesian belief network model
Zabinski J, MacDonald Gibson J
University of North Carolina at Chapel Hill

P.188 Reducing early-life exposure to radiation: a review of radon testing programs in Canadian schools
Nicol AM, Palmer A, Telfer J, Warje O
Simon Fraser University

P.189 The dose-response framework: an online compendium of risk methods organized by problem formulation
Kroner O, Haber L, Dourson M
Toxicology Excellence for Risk Assessment (TERA) Center of the University of Cincinnati

P.190 GMOs and pesticides – going beyond the data with new tools for risk communication
Reeves WR
Monsanto Company

P.191 Use of in ovo genotoxicity assay for risk assessment of food-borne compounds
Kobets T, Duan JD, Brunnemann KD, Iatropoulos MJ, Vock E, Deschl U, Williams GM
New York Medical College, Valhalla, NY, USA and Boehringer Ingelheim Pharma GmbH&Co. KG, Biberach an der Riss, Germany

P.192 An evaluation of the influenza risk reduction from antimicrobial spray application of porous surfaces
Chabrelie A, Mitchell J, Rose J, Charbonneau D, Ishida Y
Michigan State University

P.193 Monte Carlo N-Particle (MCNP) enhancements to Area Correction Factors (ACF), Gamma Shielding Factors (GSF), and Surface Factors for Rooms (Fsurf) used in superfund risk and dose calculators
Stewart DJ, Dolislager FG, Galloway LD, Bellamy MB, Finklea LR, Walker S
University of Tennessee

P.194 Can air pollution sources adversely affect soil and vegetation?
Zemba SG, Lester RR
Sanborn, Head & Associates, CDM Smith

P.195 Evaluation of developmental toxicity of multi-wall carbon nanotubes in pregnant mice after repeated intratracheal instillation
Kobayashi N, Tanaka S, Ema M, Ikarashi Y, Hirose A
National Institute of Health Sciences

P.196 Characterising uncertainty in a Toxicokinetic/Toxicodynamic (TK/TD) model-based risk assessment of skin sensitisation
MacKay C, Reynolds J, Gosling JP, Cubberley R, Dhadra S, Gellatly N, Pendlington R, Pickles J, Tang D, Maxwell G
Unilever Safety and Environmental Assurance Centre, University of Leeds

P.197 Status of regulatory decisions for perfluoroalkyl compounds: is the level of protection to the general public worth the uncertainty and cost?
Anderson JK, Goodrum P*
Integral Consulting Inc.

P.198 Predictive quantification of inhalation risks to support natural resource damage assessment
Rosenstein AB, Mori CS, Colegrove KM, Schwacke LH
Risk Assessment Consultant, Industrial Economics, Inc., Zoological Pathology Program, College of Veterinary Medicine, University of Illinois at Urbana-Champaign, Oceans & Human Health Branch, NOAA/NCCOS Hollings Marine Labor

P.199 Effects of ozone monitor upgrades and inlet height adjustments on ambient exposure risk and NAAQS compliance
Ollison WM, Leston AR
American Petroleum Institute

P.200 Climate change impacts on heat-related mortality in large urban areas in China
Li Y, Zhang W
East Tennessee State University, Renmin University (Beijing, China)

P.201 Associations between cardiovascular birth defects and disinfection by-product exposures in Massachusetts, 2000-2004
Wright JM, Evans A, Kaufman JA*, Rivera-Nunez Z, Narotsky M
Association of Schools and Programs of Public Health

P.202 A food processing vulnerability tool exploring public health risks
Hartnett E, Milton B, Wilson M, Schaffner DW, Haas C
Risk Sciences International

P.203 Probabilistic risk assessment of the exposure to formaldehyde via fish consumption in Taiwan
Chaing S-Y
China Medical University and National Taiwan University

P.204 Understanding American public perceptions of scientists' communication goals
Kotcher J, Myers T, Stenhouse N, Vraga E, Maibach E
George Mason University

P.205 Communicating environmental health risks to indigenous populations: a systematic literature review and recommendations for future research
Boyd AD, Furgal CM, Dickson D
Washington State University

P.206 Lung cancer risk from residential radon exposure
Corrigan RM
University of Ottawa

P.207 Alliance for risk assessment project: 1,4-Dioxane reanalysis in support of a regenerative hyperplasia Mode of Action (MOA)
Nance P, Dourson M
Toxicology Excellence for Risk Assessment (TERA) Center, University of Cincinnati

P.208 Risk governance through the integrating risk evaluation evaluation and the institutional systems: case of chemicals management
Tokai A, Todoroki A, Machimura T, Xue M, Kojima N, Ebisudani M, Sakamoto Y, Shiga Y, Manabe Y, Zhou L
Osaka University
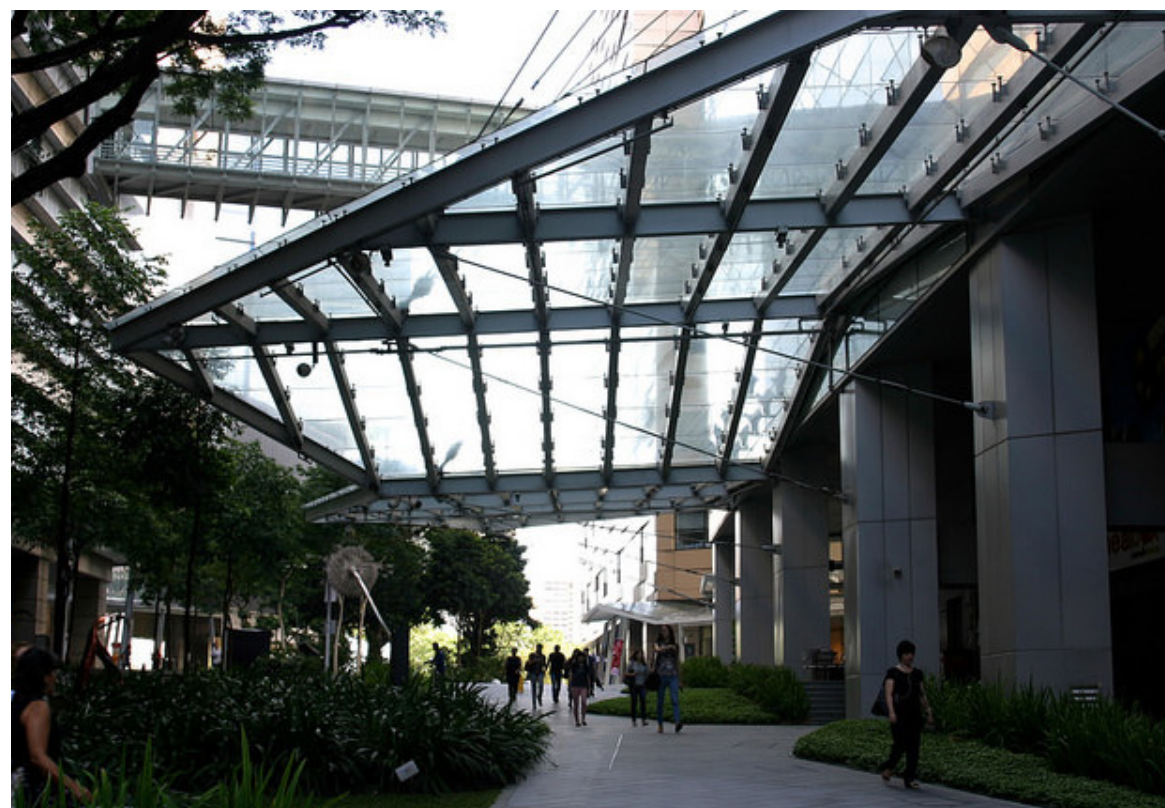
Biopolis Complex, 2015 SRA Fourth World Congress on Risk, Singapore July 2015

10:30 AM-Noon
Grand Ballroom A

T2-A Symposium: Probabilistic Approaches to Dose-Response Analysis in Chemical Risk Assessment

Chair: Allen Davis

10:30 AM   **T2-A.1**
Risk analysis - visions for the future
Hattis D
Clark University

10:50 AM   **T2-A.2**
Bayesian evidence integration of quantitative high throughput screening data
Druwe IL, Painter K, Yost EE, Burgoon LD
Oak Ridge Institute for Science and Education, National Center for Environmental Assessment, US Environmental Protection Agency

11:10 PM   **T2-A.3**
Bayesian methods for Uncertainty Factor (UF) application: proof-of-concept
Simon TW, Beck NB
Ted Simon, LLC

11:30 AM   **T2-A.4**
Bayesian hierarchical modeling as a means of conducting meta-regression: case study of cardiovascular mortality following arsenic exposure
Allen BC, Mendez W, Davis JA, Gift JS
US Environmental Protection Agency

10:30-11:30 AM
Grand Ballroom B

T2-B Intersections of International Development with Infrastructure Risk and Risk Communication

Chair: Royce Francis

10:30 AM   **T2-B.2**
Prioritizing investment risks and opportunities for the power grid in a volatile post-conflict region
Thorisson H, Lambert JH
University of Virginia

10:50 AM   **T2-B.3**
Sources of risk in the canals of Xochimilco
Iturbe-Argüelles R, Flores-Serrano RM, Pérez-Casimiro G, Ram'rez-González A
Universidad Nacional Autónoma de México

11:10 AM   **T2-B.4**
Enabling constructive stakeholder dialogues on risk and science with decision processes
Wood MD, Trump BD, Linkov I, Palma-Oliveira J
US Army Engineer Research & Development Center

10:30 AM-Noon
Grand Ballroom C

T2-C Symposium: Valuing Foreign Lives in Genocide and Mass Atrocities: Law, Intervention, and the Prominence Effect

Chair: Paul Slovic

10:30 AM   **T2-C.1**
Valuing foreign lives in genocide and mass atrocities: law, intervention, and the prominence effect
Slovic P
Decision Research

10:50 AM   **T2-C.2**
Imperatives, judgment, risk
Mazarr MJ
The RAND Corporation, Senior Political Scientist

11:10 AM   **T2-C.3**
Structuring intervention decisions to prevent genocide
Gregory R, Harstone M
Decision Research

11:30 AM   **T2-C.4**
Valuing foreign lives in genocide and mass atrocities: law, intervention, and the prominence effect
Wexler L
University of Illinois School of Law

10:30 AM-Noon
Grand Ballroom DE

T2-D Presidential Roundtable: Applying the SRA Code of Ethics

Chair: Tee Guidotti

In 2009, SRA adopted a Code of Ethics for practitioners of risk analysis. This code was not intended to address real or supposed abuse in the field by risk assessors but to protect risk practitioners going forward from inappropriate pressure. Risk assessors and risk communicators work for decision-makers, and can be vulnerable in professional and employment relationships. Risk analysis and communication practitioners could be and at times have been pressured by the decision makers to guarantee a desired outcome or to bias the message. The possibility that this could occur injects doubt into the risk communication process with the public. The existence of a code of ethics may help protect risk practitioners by documenting norms of professional behavior. Such a development would protect risk analysis and communication practitioners by establishing professional standards. As such, it may be useful protection in a showdown or personnel review and an indirect way of countering untoward pressure. It also serves to advance the professionalization of risk assessment, in particular.

Participants Include:
Guidotti T, Small M, Saner M, Schoeny R, Kane S

10:30 AM-Noon
Grand Ballroom FG

T2-E Roundtable: EU Nano Safety Cluster

Co-Chairs: Igor Linkov, Danail Hristozov, Rick Canady

Nanotechnology raises fundamental challenges for risk assessment and management. Even though traditional approached for risk assessment and risk assessment and risk management paradigms are applicable to nanomaterials, their implementation require information that is difficult to obtain given the emerging nature both of the technology's uses and understanding of nanomaterials toxicology, environmental properties and life cycle. Both US and EU governments fund significant efforts to bridge scientific and technological gaps that makes nano-enabled materials safer. Nevertheless, all these efforts are fundamentally based on enhancing traditional risk paradigm in the way it is applied to emerging technologies such as nanomaterial use. Efforts of the last several years clearly show the need in broadening traditional approaches to include a wider range of disciplines to move broadly from risk assessment to risk governance through engagement of stakeholders, manufactures, consumers through the use of formal risk-benefit analysis, decision-analytic, risk communication and risk governance tools. This session will summarize objectives and developments of SRA and EU Nanosafety Cluster (NSC) initiatives designed to convene, promote, and foster the multidisciplinary (i.e., science, policy and communications) thinking necessary to address the suite of risk analysis challenges posed by the emerging field of nanotechnology. A particular focus will be on a large, international Delphi process for generating current understanding of risk and use for nanomaterials through the Horizon 2020 ProSafe project.

Participants Include:
Bahadori T, Thomas T, van Teunenbroek T, Trump B

10:30 AM-Noon
Grand Ballroom H
T2-F Modeling Environmental Transmission of Microbes
Co-Chairs: Abani Prahhan, Jane Van Doren
Sponsored by: Microbial Risk Analysis

10:30 AM   **T2-F.1**
Modeling survival of pathogens in manure amended soil: a meta-analysis
Duret S, Chen Y, Oryang D, Dennis S, Ingram D, Mahovic M, Pouillot R, Van Doren J
Food and Drug Administration

10:50 AM   **T2-F.2**
A QMRA for the transmission of ESBL-producing Escherichia coli and Campylobacter from poultry farms to humans through flies
Evers EG, Blaak H, Hamidjaja RA, De Jonge R, Schets FM
National Institute for Public Health and the Environment

11:10 AM   **T2-F.3**
Modeling dynamic bacterial transfer in food environment using Markov Chains
Pouillot R
FDA/CFSAN

11:30 AM   **T2-F.4**
The use of HACCP for the prevention of plumbing-associated disease
Rosenblatt AR, McCoy WF
Gordon & Rosenblatt, LLC (Consultants)

10:30 AM-Noon
Grand Ballroom J
T2-G Symposium: Behavioral Models of Agents in Security and Defense
Chair: Heather Rosoff

10:30 AM   **T2-G.1**
A toolkit for exploring the impact of human behavior on cybersecurity through multi-agent simulations
Blythe JS, Kothari V, Koppel R, Smith S
University of Southern California

10:50 AM   **T2-G.2**
A behavioral game modeling cyber attackers, defenders, and users
Cui J, Kusumastuti S, Rosoff H, John RS
University of Southern California

11:10 AM   **T2-G.3**
Modeling human bounded rationality
Dehghani Abbasi Y, Kar D, Sinha A, Sintov N, Tambe M, Fang F, Nguyen TH, Brown M, Zhang Ch
University of Southern California

11:30 AM   **T2-G.4**
Agent-based modeling of life or death decisions following an urban biological catastrophe
Pynadath DV, Rosoff H, John R
University of Southern California

10:30 AM-Noon
Grand Ballroom K
T2-H Roundtable: Incorporation of Information on Endogenous Chemicals with Exogenous Exp.
Chair: Angela Lynch

The endogenous formation of chemicals also having exogenous exposures poses a challenge to risk assessment. Understanding the sources, fluctuations and functions of endogenous chemicals would aid in assessing total exposure and attribution of risk to specific exposures. Biochemical and physiological homeostatic mechanisms exert control over hormone, nutrient, oxidant and endogenous levels in cells. The evolution of risk assessment approaches to include compounds with endogenous exposures may require a paradigm shift from understanding the general pharmacokinetics of exogenously administered compounds to a broader understanding of homeostatic mechanisms contributing to internal doses and mechanisms/modes of action. Risk assessment would benefit from improved knowledge of the location and levels of endogenous chemicals, how exogenous exposure to chemicals affect endogenous levels of the same chemical in different tissues and intracellular locations, and how homeostatic control of endogenous chemicals affects levels and effects resulting from exogenous exposures. The NAS report "Science and Decisions" describes implications of chemical additivity to endogenous background processes in evaluating human risk to carcinogens and non-carcinogens. In the case of exposures to exogenous chemicals where endogenous levels are known, problem formulation could include a strategy for understanding sources and functions of normal physiological levels of the chemical and its metabolites, mechanisms of homeostatic control of levels of the endogenous and exogenous exposures at critical targets, endpoints of concern at these levels, and dose-response relationships. These considerations allow the development of a conceptual model with hypotheses for how exogenous exposures may impact risk in the presence of endogenous exposures. The Roundtable will discuss emerging data from improved technologies and will help define an improved risk assessment process incorporating this knowledge.

10:30 AM-Noon
Arlington Ballroom I
T2-I Symposium: Modernizing Risk Analysis with Cross Functional Perspectives to Guide Regulating Decisions for Food Safety
Chair: Romina Shah

10:30 AM   **T2-I.1**
FSIS' modernized risk analysis process for food safety decision-making
Kause JR, Kermis A
USDA-FSIS

10:50 AM   **T2-I.2**
FDA's risk analysis framework updates
Shah R, Van Doren J, Dennis S
US Food and Drug Administration

10:30 AM-Noon
Arlington Ballroom II
T2-J Natural Hazards Perception and Communication
Chair: Amanda Boyd

10:30 AM   **T2-J.1**
Earthquake experiences, risk perceptions and early warnings on the US West Coast
Bostrom A, Vidale JE, Ahn A
University of Washington

10:50 AM   **T2-J.2**
Testing messages to improve coastal storm risk communication
Cuite CL, Shwom RL, Hallman WK, O'Neill KM, Demuth JL, Morss RE
Rutgers University

11:10 AM   **T2-J.3**
Developing behaviorally realistic risk communications for communities vulnerable to coastal flooding
Wong-Parodi G, Fischhoff B, Strauss B
Carnegie Mellon University, Climate Central

11:30 AM   **T2-J.4**
Severe weather decision making: a study of headteachers in Wales and western England
Balog SB
World Bank and King's College London

1:30 PM-3:00 PM

Grand Ballroom A

T3-A R3: Reconsidering Regulatory Risks

Chair: Paul Schlosser

1:30 PM   **T3-A.1**

Review of EPA Superfund guidance on a dose-based protective ARAR and the PRG and DCC calculators
Yu C, Kamboj S, Cheng JJ
Argonne National Laboratory

1:50 PM   **T3-A.2**

Predicted effect of perchlorate on thyroid hormone levels in the breast- and bottle-fed infant using a new biologically-based dose-response model
Schlosser PM, Leavens TL, Kirk AB, Lumen A, Fisher JW
US EPA, PK Consultant, University of Texas - Arlington, US FDA

2:10 PM   **T3-A.3**

How does setting an Acceptable Daily Exposure (ADE) for pharmaceutical risk assessment differ from the US EPA Reference Dose (RfD) approach?
Willis AM, Ovesen J, Reichard J, Sandhu R, Maier A
University of Cincinnati, Toxicology Excellence for Risk Assessment, SafeDose, Ltd.

2:30 PM   **T3-A.4**

We always know something - lessons learned implementing systematic review
Turley AT, Cawley MA, Burch DF, Henning CC
ICF International

1:30 PM-3:00 PM

Grand Ballroom B

T3-B Symposium: Retrospective Analysis and the Characterizations of Uncertainty in Risk Management Policies: Part I

Chair: Lisa Robinson
Co-sponsored by: Society for Benefit-Cost Analysis, Economics and Benefits Analysis Specialty Group

1:30 PM   **T3-B.1**

Looking back at regulatory look-back
Coglianese C
University of Pennsylvania

1:50 PM   **T3-B.2**

Strategically targeting retrospective analysis
Baxter JR
Industrial Economics, Incorporated

2:10 PM   **T3-B.3**

Insights from program evaluation for retrospective evaluation of regulations
Newcomer K
Trachtenberg School of Public Policy and Public Administration, The George Washington University

2:30 PM   **T3-B.4**

Retrospective review of regulation in four states
Shapiro S, Borie-Holtz D
Rutgers University

1:30 PM-3:00 PM

Grand Ballroom C

T3-C Trust, Credibility and Risk Communication

Chair: Cindy Jardine

1:30 PM   **T3-C.1**

Exploring associations of perceived hazard-managing organizations' attributes with institutional stereotypes
Johnson BB
Decision Research

1:50 PM   **T3-C.2**

Perceptions of Information Credibility During a Social Media Crisis
De Marcellis-Warin N, Hosseinali-Mirza V, Warin T
Polytechnique Montréal, CIRANO

2:10 PM   **T3-C.3**

Complex dimensions of radiation risk communication in the aftermath of the Fukushima Daiichi nuclear accident
Sato A
United Nations University, Institute for the Advanced Study of Sustainability

2:30 PM   **T3-C.4**

Conflict of interest perceptions and risk-related research partnerships
Besley JC, McCright AM, Elliott KC, Oshita T
Michigan State University

1:30 PM-3:10 PM

Grand Ballroom DE

T3-D Risk and Resilience

Chair: Aleksandar Ganin

1:30 PM   **T3-D.1**

Dam risk management and community resilience
Esfandiary S, Francis RA, Demby JE
DHS/FEMA

1:50 PM   **T3-D.2**

Resilience in interdependent networks: cascading failure and recovery
Ganin AA, Massaro EM, Mangoubi R, Kitsak M, Linkov I
University of Virginia, Massachusetts Institute of Technology, Charles Stark Draper Laboratory, Northeastern University, US Army Engineer Research and Development Center

2:10 PM   **T3-D.3**

Resilience metrics for decision making
Emanuel RN
Johns Hopkins University Applied Physics Laboratory, University of Maryland-College Park

2:30 PM   **T3-D.4**

Analysis of the efficacy of capacity-based resilience-enhancement options for passenger rail system disruptions
Resurreccion JZ, Santos JR, Blanco AB
University of the Philippines

2:50 PM   **T3-D.5**

Strategic risk assessments to support decision makers: cybersecurity and beyond
Howard PM, Arimoto CW
ABS Group

1:30 PM-3:10 PM

Grand Ballroom FG

T3-E Symposium: Expanding Policy and Practice for Resilience Planning at National and Regional Levels

Chair: Henry Willis

1:30 PM   **T3-E.1**

Developing an integrated, cross-agency coastal resilience master plan: a case study in Jamaica Bay, New York
Fischbach JR, Knopman D, Groves D, Nixon K
RAND Corporation

1:50 PM   **T3-E.2**

Regional perspectives on resilience planning from the National Academy of Sciences Resilient America Roundtable
Morgan MG, Augustine LA
Carnegie Mellon University

2:10 PM   **T3-E.3**

Examining current and future clusters of US infrastructure exposure to natural disasters
Willis HH, Narayanan A, Fischbach JR, Warren D, Molina-Perez E, Stelzner C, Loa K, Kendrick L, Sorenson P, LaTourrette T
RAND Corporation

2:30 PM   **T3-E.4**

The federal role in resilience planning and policy: perspectives from the Department of Homeland Security Office of Infrastructure Protection
Secor M, Barr L, Kolasky R, Ellis-Peed S
US Department of Homeland Security

2:50 PM   **T3-E.5**

Managing risks and resilience of aging infrastructure in Europe: the EU-project SafeLife-X
Jovanovic AS, Husta S, Caillard B
Steinbeis Advanced Risk Technologies

1:30 PM-3:00 PM
Grand Ballroom H
T3-F Microbial Risk Modeling
Co-Chairs: Hong Yang, Mark Walderhaug
Sponsored by: Microbial Risk Analysis Specialty Group

1:30 PM   T3-F.1
Assessment of global vCJD risk to inform decisions to reduce potential transfusion-transmitted vCJD risk in the US
Huang Y, Bui-Klimke T, Gregori L, Asher DM, Anderson SA, Forshee RA, Yang H
Food and Drug Administration

1:50 PM   T3-F.2
Determining donor deferral threshold values for countries vulnerable to a dengue outbreak
Lane C, Chada K, Yang H
US Food and Drug Administration

2:10 PM   T3-F.3
A computational tool for risk assessment of transfusion transmitted diseases associated with travel exposure of donors
Chada K, Zhang G, Kreimeyer K, Simonetti A, Yang H
Food and Drug Administration and Engility Corporation

2:30 PM   T3-F.4
Conceptual modelling of infections and application to risk assessment
Soumpasis I, Knapp L, Pitt T, Amezquita A
Unilever

1:30 PM-3:00 PM
Grand Ballroom J
T3-G Joint SRA/AIHA Roundtable: Risks & Benefits of Electronic Cigarettes
Co-Chairs: Pamela Williams, Mary O'Reilly
Sponsored by: American Industrial Hygiene Association, Society for Risk Analysis

Electronic cigarette (e-cig) use has increased significantly in recent years due to product marketing and the perception that e-cigs are a safer alternative to traditional tobacco products. Although e-cigs likely result in a lower health risk than traditional cigarettes for users and bystanders, they are not risk free. For example, ultrafine particles generated from e-cigs can be inhaled from direct or second-hand aerosols. In addition, exposure to low levels of volatile organic compounds (VOC), aldehydes, metals, nicotine, glycol ethers, and other chemicals have been linked to e-cig use, particularly in indoor environments. Nicotine is an addictive compound known to adversely impact fetal and adolescent brain development, and glycol derivatives and VOCs can adversely affect pulmonary function. Data on the effect of e-cigs on lung function are limited and inconclusive, and long-term studies, including studies of long-term pulmonary, cardiovascular and carcinogenic effects of e-cig use are non-existent. Overall, the available data are currently insufficient to fully evaluate the risks and potential benefits of e-cigs. Challenges in quantifying risks include the vast heterogeneity of the devices, e-liquid constituents and use patterns making it difficult to develop standardized exposure measurements. Data demonstrating the efficacy of e-cigs as a smoking cessation tool are also lacking. Although some states and localities have begun issuing their own regulations related to e-cigs due to growing public health concerns, these products remain largely unregulated. The FDA, which does not currently regulate e-cigs as tobacco products, recently issued a proposed rule to assert jurisdiction over these products. In this roundtable discussion, the public health, social, environmental and regulatory aspects of e-cigs will be explored in more detail by panelists with multi-disciplinary expertise in medicine, exposure and risk assessment, and federal rulemaking.
Participants Include:
Froehlig T, Rossner A, O'Reilly MV, Drummond MB, Durmowicz EL

1:30 PM-3:00 PM
Grand Ballroom K
T3-H New Tools and Models for Chemical Exposure Assessment
Chair: Chris Greene

1:30 PM   T3-H.1
Exposure Factors Interactive Resource for Scenarios Tool (ExpoFIRST)
Cawley M, Overton R, Hartman P, Turley A, Phillips L, Moya J
ICF International, US Environmental Protection Agency

1:50 PM   T3-H.2
USEPA's land-based materials management exposure and risk assessment tool system
Babendreier J, Womack D, Parks A, Taylor T*
US Environmental Protection Agency

2:10 PM   T3-H.3
Case study using the DCC calculator and RESRAD codes
Kamboj S, Yu C, Cheng JJ
Argonne National Laboratory

2:30 PM   T3-H.4
Advances in Bystander exposure modeling: 1,3-D agricultural uses
Driver J, Van Wesenbeeck I
risksciences.net, LLC, Dow Agrosciences, LLC

1:30 PM-3:00 PM
Arlington Ballroom I
T3-I Presidential Roundtable: Eco-Environmental Risk Management in China: Insights and Recommendations of the 2015 China Council (CCICED) Report to the National Government
Co-Chairs: Jun BI, Ortwin Renn, Jonathan Wiener

In November 2015, the Special Policy Study team on "Environmental Risk Management" presented its report to the China Council for International Cooperation on Environment and Development (CCICED) in Beijing. The team consisted of experts from China and other countries, co-chaired by Prof. Jun BI (dean of the School of the Environment at Nanjing University) and Dr. George Greene (International Institute for Sustainable Development, Ottawa). The CCICED commissioned the report to advise the Chinese national government on the needs for, and key institutional reforms toward, better risk management of the many pressing environmental issues in China. The report makes recommendations in four main areas: risk governance institutions; risk goals, strategies and decision making; enabling measures such as information monitoring; and risk communication and public engagement. The CCICED will next present the report to the China State Council and the Office of the Premier. This roundtable session will discuss China's environmental risks, and the insights and recommendations of the new CCICED report.
Participants Include:
Jun BI, Ortwin Renn, Jonathan Wiener; Nanjing University, University of Stuttgart; SRA Past President, Duke University; SRA Past President

1:30 PM-3:00 PM
Arlington Ballroom II
T3-J Coping with the Wild
Chair: Robin Wilson

1:30 PM   T3-J.1
Communicating human-black bear conflicts: message framing, point of reference and risk perception
Lu H, Siemer WF, Baumer MS, Decker DJ
Cornell University

1:50 PM   T3-J.2
One health messaging about bats and rabies: how framing of risks, benefits, and attributions can support public health and wildlife conservation goals
Lu H, McComas K, Buttke D, Rob S, Wild M
Cornell University and National Park Service

2:10 PM   T3-J.3
Encouraging public cooperation to better manage invasive species
Zwickle A, Hamm J, Gore M
Michigan State University

2:30 PM   T3-J.4
Risk attitudes and perceptions in household evacuation decision-making in wildfire
Walpole HW, Wilson RS, McCaffrey SM
The Ohio State University

3:30 PM-5:10 PM

Grand Ballroom A

T4-A Symposium: Genetic Toxicology at the CrossRoads: Moving from Qualitative Hazard Identification to Quantitative Risk Assessment

Chair: Rita Schoeny

3:30 PM **T4-A.1**

Making a case for mutagenicity as a relevant toxicological endpoint to derive permissible exposure levels

Heflich RH
US Food and Drug Administration

3:50 PM **T4-A.2**

Case studies of genotoxic agents acting through non-mutagenic or non-linear modes of action

Eastmond DA
University of California, Riverside

4:10 PM **T4-A.3**

Analyses of genotoxicity dose-response data: different approaches for deriving Point-of-Departure (PoD) metrics

White PA, Long AS, Wills J, Johnson GE, Gollapudi BB, Menzies G, Avancini D, Lewis PD
Health Canada

4:30 PM **T4-A.4**

Advanced algorithms for the determination of genetic toxicity PoD Metrics: utility for potency comparisons and MOA determination

Wills JW, Long A, Johnson GE, Soeteman-Hernandez LG, Slob W, White PA*
Health Canada, Swansea University, The National Institute for Public Health & Environment

4:50 PM **T4-A.5**

Integration of genetic toxicity dose-response data into human risk assessment

Levy DD
US FDA Center for Food Safety and Applied Nutrition

3:30 PM-5:10 PM

Grand Ballroom B

T4-B Symposium: Retrospective Analysis and the Characterizations of Uncertainty in Risk Management Policies: Part 2

Chair: Nellie Lew
Co-sponsored by: Society for Benefit-Cost Analysis, Economics and Benefits Analysis Specialty Group

3:30 PM **T4-B.1**

The economic impact of the Food and Drug Administration's juice HACCP rule

Minor T, Parrett M
US Food and Drug Administration

3:50 PM **T4-B.2**

Food safety regulation and foodborne illness: evidence from USDA's meat and poultry HACCP rule

Restrepo B, Schuttringer E
US Food and Drug Administration

4:10 PM **T4-B.3**

Confronting expectations: technical change and minimum efficiency performance standards

Taylor MR, Spurlock CA, Yang HC
Lawrence Berkeley National Laboratory

4:30 PM **T4-B.4**

An uncertainty analysis of recent air regulations

Krutilla K, Good DH, Graham JD, Fledderman K
Indiana University

4:50 PM **T4-B.5**

Uncertainty analysis for major proposed regulations: findings from the Mercatus report card

Ellig JE
George Mason University

3:30 PM-5:00 PM

Grand Ballroom C

T4-C Joint SRA/SOT Roundtable: Discussion on TSCA Reform

Co-Chairs: Pamela Williams, Nancy Beck
Sponsored by Society of Toxicology, Society for Risk Analysis

The Toxic Substances Control Act (TSCA), the statute by which many chemicals in commerce are regulated in the United States, has been the focus of much recent Congressional attention. Specifically, congress has considered how well the existing statute reflects current scientific knowledge and societal need and there exists bipartisan agreement that TSCA is in need of reform. In this roundtable, recent advances in both the House and Senate on TSCA Reform bills will be discussed as well as the societal, regulatory, and public policy implications of a revised TSCA bill. Perspectives will include those of risk assessors, risk managers, administrative lawyers, regulators, congressional hill staffers, NGO's and other stakeholders. After brief remarks from roundtable speakers, time will be allotted for a facilitated robust discussion with the audience and panelists.

Participants Include:

Black J, Couri J, Farland W, Gray G, Greenwood M, Jones J, Walls M, Denison R, Conrad J, Marchant G, Dunn A

3:30 PM-5:00 PM

Grand Ballroom DE

T4-D Wicked Problems, Black Swans, Climate Change and Ecological Risk

Chair: Wayne Landis

3:30 PM **T4-D.1**

Integrated ecological and human health risk assessment for the South River, VA

Harris MJ, Landis WG
Western Washington University

3:50 PM **T4-D.2**

Integrating climate change into ecological risk assessment for contaminated sites

Gaasland-Tatro LA, Landis WG
Western Washington University

4:10 PM **T4-D.3**

Spatially explicit approaches to characterising global risks: conceptual and methodological challenges

MacGillivray BH
Cardiff University

4:30 PM **T4-D.4**

Wicked problems, black swans, and the use of ecological risk assessment in adaptive management

Landis WG, Markiewicz AJ
Western Washington University

3:30 PM-5:00 PM

Grand Ballroom FG

T4-E Symposium: Risk-Informed and Decision-Making for Critical Infrastructure

Chair: Seth Guikema

3:30 PM **T4-E.1**

Assessing risk and resilience for critical infrastructure systems

Alderson DL, Carlyle WM
Naval Postgraduate School

3:50 PM **T4-E.2**

Performance measure selection and its impact on risk characterization and decision-making and in interdependent infrastructure

Reilly AC, Samuel AS, Guikema SD
Johns Hopkins University

4:10 PM **T4-E.3**

Robust climate change adaptation under deep uncertainty: incorporating multiple criteria

Shortridge JE, Guikema SD
The Johns Hopkins University

4:30 PM **T4-E.5**

Overall regional risk assessment of four Norwegian municipalities

Flage R, Amundrud Ø, Wiencke HS
University of Stavanger, Proactima

3:30 PM-5:10 PM

Grand Ballroom H

T4-F New Computational Tools for Microbial Risk Assessment

Co-Chairs: Hong Yang, Mark Walderhaug
Sponsored by: Microbial Risk Specialty Group

3:30 PM **T4-F.1**

A computational tool for rapid risk assessment of transfusion-transmitted infectious diseases

Yang H, Chada K, Simonetti A, Zhang GF, Kreimeyer K, Abdelaziz K, Walderhaug MO, Bourouis A, Forshee RA, Anderson SA
Food and Durg Administration, Engility Co-operation

3:50 PM **T4-F.2**

FDA-iRISK® 2.0: new features and case studies for ranking microbial and chemical hazards in foods

Chen Y, Dennis S, Pouillot R, Paoli G, Santillana Farakos SM, Van Doren J
Food and Drug Administration, Risk Sciences International

4:10 PM   **T4-F.3**

The Canadian Food Inspection Agency's food business risk assessment model methodology

Paoli GM, Quessy S, Tiwari A, Currie R, Aklilu S

Canadian Food Inspection Agency, Risk Sciences International Inc, Université de Montréal

4:30 PM   **T4-F.4**

Multicriteria-based ranking model for risk management of animal drug residues in milk and milk products

Fanaselle W, Oryang D, Van Doren J

Center for Food Safety and Applied Nutrition, Food and Drug Administration

4:50 PM   **T4-F.5**

Multi-criteria decision analysis for risk management of microbial hazards in low moisture foods

Batz M, Montibeller G, Cahill S, Kojima M*

University of Florida, Loughborough University UK

3:30 PM-5:10 PM

Grand Ballroom J

T4-G Symposium: Global Catastrophic Risks

Chair: Seth Baum

3:30 PM   **T4-G.1**

Climate change as a global catastrophic risk

Ayyub B, Scouras J

University of Maryland College Park

3:50 PM   **T4-G.2**

Analyzing long term risks of artificial intelligence catastrophe

Barrett AM, Baum SD

Global Catastrophic Risk Institute and ABS Consulting

4:10 PM   **T4-G.3**

Geoengineering and the distant future of earth's climate

Haqq-Misra JD

Blue Marble Space Institute of Science

4:30 PM   **T4-G.4**

Nuclear war as a global catastrophic risk

Scouras J, Ayyub B

Johns Hopkins University Applied Physics Laboratory

4:50 PM   **T4-G.5**

New pathways to global catastrophic risks

Tonn B, Stiefel D

University of Tennessee - Knoxville

3:30 PM-5:00 PM

Grand Ballroom K

T4-H Innovations, Methods, and Best Practices for Chemical Exposure Assessment

Chair: Shawn Sager

3:30 PM   **T4-H.2**

Evaluation of vapor pressure bands in a screening level risk assessment

Qian H, Zaleski R, Money C

ExxonMobil Biomedical Sciences, Inc., Cynara Consulting Ltd

3:50 PM   **T4-H.3**

A systematic process for evaluating the exposure quality of inhalation studies

Whalan JE

US Environmental Protection Agency

4:10 PM   **T4-H.4**

Estimating greenspace exposure and benefits for cumulative risk assessment applications: findings from an EPA technical working group

Gernes RA, Rice G, MacDonnell MM, Hertzberg R, Beresin GA, Wright JM

ASPPH/US EPA (Association of Schools and Programs of Public Health/ EPA Fellowship Program)

4:30 PM   **T4-H.5**

Evaluation of the source of indoor air chlorinated volatile organic constituents

Sager SL

ARCADIS US, Inc.

3:30 PM-5:10 PM

Arlington Ballroom I

T4-I Empires Big and Small: Multi-Level Systems Analysis for Decisions

Chair: Margaret MacDonell

3:30 PM   **T4-I.1**

Smart and effective large-scale system risk analysis

Chopade PV, Zhan JZ, Crowther KG

North Carolina A&T State University and MITRE

3:50 PM   **T4-I.2**

Scoring rules, value of information, and sensitivity analysis

Borgonovo E, Hazen GB, Jose VRR, Plischke E

Georgetown University

4:10 PM   **T4-I.3**

Analysts eschew new tools for big data scrutiny

Berube DM, Prince GP

North Carolina State University

4:30 PM   **T4-I.4**

Bringing the future into ecosystem service valuation using a deliberative multicriteria evaluation process

Mavrommati G, Howarth RB, Borsuk ME

Dartmouth College

4:50 PM   **T4-I.5**

This is the title siting facilities: the contribution of risk analysis

Kasperson RE, Ram BJ

Clark University

3:30 PM-5:00 PM

Arlington Ballroom II

T4-J Risk Attitudes and Behavior

Chair: Cara Cuite

3:30 PM   **T4-J.1**

Wildland fire manager choices: addressing short-term risk aversion and intertemporal tradeoffs

Wilson RS, Konar A, Winter P

The Ohio State University

3:50 PM   **T4-J.2**

Antinuclear behavioral intentions: the role of knowledge, information processing, and risk perception

Wei J, Zhu W

University of Science, Technology of China

4:10 PM   **T4-J.3**

What drives mass public adoption of new security technology? Lessons learned from two surveys

Iles I, Fisher Liu B, Ackerman G, Egnoto M, Roberts H, Smith D

University of Maryland, College Park, USA

4:30 PM   **T4-J.4**

Public information needs after terrorist CBRN events

Sellke P

Dialogik

5:15 PM-6:30 PM

Grand Ballroom A

T5-A Roundtable: IRIS CAFE: An Open Space Discussion Among IRIS Leaders and Stakeholders

Co-Chairs: Nancy Beck, Vince Cogliano

After presentation of an overview and future vision by Dr. Ken Olden, the director for the National Center for Environmental Assessments (NCEA), this session will consist of a facilitated discussion focusing on gathering input and feedback from all participants to inform how the IRIS program can continue to enhance its scientific approach to weighing and integrating evidence. Based on the status of implementation in December 2015, the facilitated discussion will focus participants on specific areas where feedback and input would be most timely and helpful. This will likely include topics such as criteria for identifying evidence, judging the quality and relevance of data, and approaches for integrating evidence from all data streams, including mechanistic information, using a transparent and systematic framework. This session will allow for a more participatory dialogue among IRIS leaders (Drs Olden and Cogliano) and stakeholders.

8:00 AM-9:40 AM
Grand Ballroom A

W1-A Symposium: Challenging the Status Quo for Dose-Response Analysis of Chemicals Part I

Co-Chairs: Michelle Deveau, Julia Pletz
Sponsored by: Dose Response Specialty Group, and Occupational Health and Safety Specialty Group

8:00 AM   **W1-A.1**
The evolution of quantitative risk assessment as applied in NIOSH Recommended Exposure Limits (RELs)
Whittaker C
NIOSH

8:20 AM   **W1-A.2**
Incorporation of chemical-specific data in dose-response assessments for occupational and environmental exposure limits
Deveau M, Maier A, Meek ME, Krewski D
University of Ottawa, University of Cincinnati

8:40 AM   **W1-A.3**
Occupational Exposure Limits (OELs) and bolus exposures
Jayjock MA
Jayjock Associates, LLC

9:00 AM   **W1-A.4**
PBPK modeling of worker exposure to individual chemicals and mixtures
Krishnan K
Université de Montréal

9:20 AM   **W1-A.5**
Risk assessment approaches for dealing with data poor chemicals
Lewandowski TA, Cohen JM
Gradient

8:00 AM-9:30 AM
Grand Ballroom B

W1-B Symposium: Frontiers in Benefit-Cost and Risk Analysis

Chair: Amber Jessup
Co-sponsored by: Society for Benefit-Cost Analysis, Economics and Benefits Analysis Specialty Group

8:00 AM   **W1-B.1**
Income and the value of health risk reductions: implications for benefit-cost analysis and cost-effectiveness analysis globally
Robinson LA, Hammitt JK
Harvard University (Center for Risk Analysis)

8:20 AM   **W1-B.2**
Cancer risk valuation: to treat or to prevent, that is the question
Rheinberger CM, Herrera D, Hammitt JK
Harvard University, Toulouse School of Economics

8:40 AM   **W1-B.3**
Differences of unitary benefits of air pollution abatement across gender and socioeconomic position
Cifuentes L, Borchers N
Pontificia Universidad Católica de Chile

9:00 AM   **W1-B.4**
Benefit-risk assessment in human drug review
Eggers SL, Frey PJ, Vaidya P, Sile H
US Food and Drug Administration

8:00 AM-9:30 AM
Grand Ballroom C

W1-C Symposium: Recognizing and Measuring Excellence among Risk Regulatory Agencies Worldwide

Chair: Adam Finkel

8:00 AM   **W1-C.1**
Listening, learning, leading: a framework of excellence in risk regulation
Coglianese C
University of Pennsylvania

8:20 AM   **W1-C.2**
The analytical consequences of a risk-based regulatory mandate: finding a balance
Paoli GM, Wiles A
Risk Sciences International

8:40 AM   **W1-C.3**
Public engagement and transparency in regulation: a field guide to regulatory excellence
Nash JH, Walters DE
Harvard Kennedy School

9:00 AM   **W1-C.4**
Beyond best-in-class: a secret to regulatory excellence
Finkel AM
University of Pennsylvania Law School, University of Michigan School of Public Health

8:00 AM-9:30 AM
Grand Ballroom DE

W1-D Symposium: Managing the Risk of Radiological and Nuclear Threats: Identification, Assessment, Capability Building, and Implementation

Chair: Steve Sin
Sponsored by: Applied Risk Management Specialty Group

8:00 AM   **W1-D.1**
A multi-method approach to assessing radiological/nuclear terrorism threats: identifying the adversary
Ackerman GA
University of Maryland

8:20 AM   **W1-D.2**
Adoption preferences of law enforcement for programmatic innovations
Egnoto MJ, Iles IA, Roberts HA, Smith DS, Liu BF
University of Maryland

8:40 AM   **W1-D.3**
Mapping the domestic radiological/nuclear risks
Sawyer JS
University of Maryland, College Park

9:00 AM   **W1-D.4**
Preparing for the unknown: inclusion (or exclusion) of radiological and nuclear issues in the annual threat and hazard identification and risk assessment
Sin SS, Kirk Sell T, Watson M, Boddie C, Spalding ST
National Consortium for the Study of Terrorism and Responses to Terrorism (START), University of Maryland

8:00 AM-9:30 AM
Grand Ballroom FG

W1-E Symposium: Hazard Communication for Nanoscale Materials: Addressing Hazards Under the Globally Harmonized System for Classification

Co-Chairs: Jo Ann Shatkin, Audrey Turley

8:00 AM   **W1-E.1**
GHS and nanomaterials: what is required under GHS and developments within the UN Subcommittee
Carter JM
Occupational Safety and Health Administration

8:20 AM   **W1-E.2**
Experience from the field: are we making any progress with hazard communication for nanomaterials?
Lippy BE
CPWR - The Center for Construction Research and Training

8:40 AM   **W1-E.3**
Case study, safety data sheet development for a pre-commercial nanoscale material
Shatkin JA
Vireo Advisors, LLC

9:00 AM   **W1-E.4**
Evaluating the completeness and effectiveness of current safety data sheets for nanomaterials
Geraci CL
National Institute for Occupational Safety and Health

W1-F New Tools for Risk Assessment

8:00 AM-9:30 AM

Grand Ballroom H

Chair: Jane Van Doren

8:00 AM   W1-F.1

Penalized B-Spline regression to analyze trends in reported foodborne illness

Powell MR

US Department of Agriculture

8:20 AM   W1-F.2

Selection of surrogates for biological agents with long-term environmental persistence

Mitchell JB, Misra V

Michigan State University

8:40 AM   W1-F.3

NorOPTIMAL- an agent-based model to identify cost-effective control measures for human norovirus in long-term care facilities

Mokhtari A, Beaulieu S, Anderson M, Jaykus LA

Neptune and Company, Inc.

9:00 AM   W1-F.4

United States and Canada collaboration on an innovative and flexible approach to quantitative modeling of the exposure to human norovirus from consumption of oysters

Van Doren JM, Holtzman J, Pouillot R, Smith M, Catford A, Buenaventura E, Burkhardt W, Calci K, Edwards R, Roberts C

Food and Drug Administration, Health Canada, Canadian Food Inspection Agency, Environment Canada

---

W1-G Authentic Cyber Phish in Water

8:00 AM-9:30 AM

Grand Ballroom J

Chair: Marshall Kuypers

8:00 AM   W1-G.1

Water distribution system cybervulnerability and risk analysis

Rao V, Francis R

The George Washington University

8:20 AM   W1-G.2

Risk in cyber systems

Kuypers MA, Pate-Cornell ME

Stanford University

8:40 AM   W1-G.3

Using signal detection theory to measure phishing detection ability and behavior

Canfield C, Fischhoff B, Davis A

Carnegie Mellon University

9:00 AM   W1-G.4

Tradeoff value assessment for features of password as a security measure and method of authentication

Kusumastuti S, Nguyen K, John RS, Rosoff H

University of Southern California

W1-H Symposium: Using MOA/AOP Frameworks for Chemical-Specific Decisions: Prioritizations through Risk Assessment

8:00 AM-9:30 AM

Grand Ballroom K

Co-Chairs: Mary Manibusan, Bette Meek

8:00 AM   W1-H.1

From mode of action to adverse outcome pathways - moving towards regulatory applicability

Meek B

University of Ottawa

8:20 AM   W1-H.2

Developing and integrating mutagenic & non-mutagenic Mode of Action (MOA) knowledge for improved understanding of carcinogenesis with Adverse Outcome Pathways (AOPs)

Pottenger LH, Klapacz J, Moore MM, Schoeny R, Banton MI

The Dow Chemical Company, Ramboll Environ, US EPA OSP/ORD, LyondellBasell

8:40 AM   W1-H.3

Application of endocrine adverse outcome pathway concepts and use in the endocrine disruptor screening program

Browne PB

Office of Science Coordination and Policy, EPA

9:00 AM   W1-H.4

Scientific confidence framework to help support the application of adverse outcome pathways for regulatory purposes

Becker R, Patlewicz G, Simon TW, Rowlands JC, Budinsky RA

American Chemistry Council, Environmental Protection Agency, Ted Simon LLC, Dow Chemical Company

---

W1-I Symposium: Benefit-Risk Assessment for Medical Products

8:00 AM-9:40 AM

Arlington Ballroom I

Chair: Hong Yang

8:00 AM   W1-I.1

Overview of benefit-risk assessment for medical products

Yang H

US Food and Drug Administration, Center for Biologics Evaluation and Research

8:20 AM   W1-I.2

Mathematical statistician

Li X, Irony T

Food and Drug Administration

8:40 AM   W1-I.3

Benefit-risk analysis of pharmacokinetic-based personalized dosing of recombinant proteins in hemophilia patients

Tegenge MA, Forshee RA

Center for Biologics Evaluation and Research, FDA

9:00 AM   W1-I.4

Incorporating patient perspectives in medical product life cycle

Ho M, Irony T

Center for Devices and Radiological Health, US Food and Drug Administration

9:20 AM   W1-I.5

Bayesian approach to benefit-risk assessment with application to a clinical trial data

Tiwari R

FDA

W1-J Opportunities and Effects of Risk Visualization

8:00 AM-9:30 AM

Arlington Ballroom II

Chair: Sharon Friedman

8:00 AM   W1-J.1

Does icon type of pictographs influence risk information processing and decision making in high and low numerates? An eye-tracker experiment

Keller C, Kreuzmair C, Siegrist M

ETH Zurich

8:20 AM   W1-J.2

Cartography for visualizing anthropogenic threats: a semiotic approach to communicating threat information in 3-D spatial models

Staffel CD

University of Southern California and IBM

8:40 AM   W1-J.3

Blowing, fast and slow: how temporal units for a hurricane forecasting map shapes risk judgment and decision making

Roh S, Cho H

Cornell University

9:00 AM   W1-J.4

Tornado risk perception from visual cues

Dewitt B, Fischhoff B, Broomell S, Davis A

Carnegie Mellon University

9:45 AM-11:15 AM
Grand Ballroom A

W2-A Symposium: Challenging the Status Quo for Dose-Response Analysis of Chemicals Part II
Co-Chairs: Michelle Devean, Julia Pletz
Sponsored by: Dose Response Specialty Group, and Occupational Health and Safety Specialty Group

9:45 AM **W2-A.1**

Complexities of conducting occupational risk assessments for low molecular weight allergens
Dotson GS
Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health

10:05 AM **W2-A.2**

A giant step forward in the use of health based exposure limits in pharmaceutical manufacturing
Lovsin Barle E
Novartis Pharma AG

10:25 AM **W2-A.3**

Adequacy of existing OSHA Pb standards and alternatives for protection of military firing range personnel
Bannon DI
US Army Public Health Command

10:45 AM **W2-A.4**

An evaluation of epidemiologic studies of low-level exposures to organophosphorus insecticides and implications for risk assessment
Reiss R
Exponent

9:45 AM-11:15 AM
Grand Ballroom B

W2-B Roundtable: Decision Analysis for Uncertain Futures
Chair: Susan Dudley
Co-sponsored by: Society for Benefit-Cost Analysis, Economics and Benefits Analysis Specialty Group

This interdisciplinary panel co-sponsored with the Society for Benefit Cost Analysis will explore the key issues and best practices for understanding and responding to uncertain, distant, global events. What types of events/risk should policy makers be concerned about? Can benefit-cost analysis (BCA) be improved as a decision-making tool applied to potentially significant, global future risks to wellbeing? What are best practices for addressing uncertainty and understanding risk? How should policy makers think about risk management? What are the challenges and possible techniques for discounting different outcomes? This Roundtable is co-sponsored with the Society for Benefit Cost Analysis.

Participants Include:

Carrigan C, King H, Linguiti P, Smith A, Dudley S, Thierer A

9:45 AM-11:15 AM
Grand Ballroom C

W2-C Presidential Roundtable: More than Science Alone: How Best to Accept Tox 21 Results to Inform Decision Making?
Co-Chairs: Jack Fowle, Nancy Beck

"Tox 21" is the term used to describe the recent advances to harness high speed computing and improved understanding of the molecular events leading to toxicity in a systems approach to implement the National Research Council's 2007 report "Toxicity Testing in the 21st Century: A Vision and a Strategy". Significant advances have been made under Tox 21 to provide a scientific basis to more efficiently evaluate chemicals for their risk potential following exposure to humans and the environment. Tox 21 also provides a promise to design sustainable chemicals and chemical products. Spearheaded by the EPA, NIEHS, NCGC and FDA through the "Tox 21 Consortium" attention has been paid to developing the Tox 21 program to meet the scientific needs of the national and international community to develop safe food and drugs, to enable sustainable "green" chemistry, and to better protect the human health and the environment. Nonetheless, there are still many uncertainties and concerns about the performance of the new approaches to inform risk analyses compared to the traditional toxicity and exposure assessment approaches. This Roundtable will bring together a diverse set of participants to discuss Tox 21 accomplishments, how they might be used to better inform risk analyses, and to discuss the promise, issues and concerns surrounding Tox 21. Special emphasis will be placed on the legal, social, political and economic considerations that must be woven into decisions surrounding the adoption and use of Tox 21. In addition to providing a forum for SRA members to learn about Tox 21 a key goal of this Roundtable is to seek input from SRA members about what points should be considered by Tox 21 leaders about how best to integrate Tox 21 into the risk analysis culture and practice.

Participants Include:

Thomas R, Housenger J, McPartland J, Elliott ED, Mannix B
US EPA, Environmental Defense Fund, Covington & Burling LLP, George Washington University

9:45 AM-11:15 AM
Grand Ballroom DE

W2-D Joint SRA/SETAC Roundtable: Scientific Integrity in Publications
Co-Chairs: Pamela Williams, Charlie Menzie
Sponsored by Society of Environmental Toxicology and Chemistry, Society for Risk Analysis

The leadership of scientific societies, journal editors, publishers, and the public have expressed concerns about the integrity and reliability of scientific writings and presentations. At a time when it is especially important that scientists be heard and be part of informing important decisions, there may be an erosion in confidence. And there are cases where there is cause for concern. The rush to publish, the need to secure funds for future research or to to support an initiative, and even the human need to be recognized for having said something important can all influence the topic, what is said about it, and how that message is presented. Not surprisingly "positive results" are greatly favored over "negative results" despite the importance of the latter. This round table brings together representatives from the Society of Environmental Toxicology and Chemistry (SETAC) and the Society for Risk Analysis (SRA) to discuss the complex topic of how scientific societies with journals can contribute to sustaining scientific integrity. Panelists will include the journal editors, a representative from Wiley (publisher of the journals), and past presidents from both societies. The panelists will provide brief prepared remarks and then will be asked to address several critical questions posed by the moderator and audience. A summary perspective will be provided at the close of the session.

Participants Include:

Menzie C, Cantor R, Cox LA, Wenning R, Landis W, Reiss R, Goodfellow

9:45 AM-11:25 AM
Grand Ballroom FG

W2-E Developments in Environmental and Biological Risk Assessment for Nanoscale Materials
Co-Chairs: Jeremy Gernand, Audrey Turley

9:45 AM **W2-E.1**

Insights from a model of silver and zinc oxide nanoparticle fate in a Virginia watershed
Dale AL, Lowry GV, Casman EA
Carnegie Mellon University

10:05 AM **W2-E.2**

Adsorption of algal extracellular polymeric substances to TiO_2 nanoparticles: Effects on surface properties and fate of nanoparticles
Adeleye AS, Rutten P, Keller AA
University of California, Santa Barbara, University of California's Center for Environmental Implications of Nanotechnology

10:25 AM **W2-E.3**

Analysis of soil bacteria susceptibility to manufactured nanoparticles via data visualization
Liu R, Ge Y, Holden PA, Cohen Y
UCLA Institute of the Environment and Sustainability

10:45 AM **W2-E.4**

A clustering analysis algorithm for the examination of CNT pulmonary toxicity in rodents
Ramchandran V, Gernand JM
Pennsylvania State University

11:05 AM **W2-E.5**

Development of a multiscale systems biology framework to support risk analysis for inhaled particulate matter
Mukherjee D, Gow AJ, Schwander S, Chung KF, Tetley TD, Zhang J, Georgopoulos PG
Rutgers University, Imperial College, UK, Duke University

9:45 AM-11:15 AM
Grand Ballroom H

W2-F Symposium: Risk-Benefit, Communication and Decision Making in Food Safety

Co-Chairs: Juliana Ruzante, Khara Grieger

9:45 AM   **W2-F.1**
An overview of risk-benefit assessment in the area of food safety and nutrition
Ruzante JM, Grieger K, Richardson A, Kowalcyk B, Nauta MJ, Woodward K
RTI International, National Food Institute

10:05 AM   **W2-F.2**
Risk-benefit communication in nutrition and food safety
Fischer ARH
Wageningen University

10:25 AM   **W2-F.3**
A qualitative risk-benefit assessment for nanomaterials in food
Grieger KD
RTI International

10:45 AM   **W2-F.4**
Risk-benefit: what is next?
Nauta MJ, Tetens I, Poulsen M
National Food Institute, Technical University of Denmark

9:45 AM-11:15 AM
Grand Ballroom J

W2-G Symposium: Aviation Security with Dynamic Risk Management

Chair: Robin Dillon-Merrill

9:45 AM   **W2-G.1**
Dynamic aviation risk management solution
Fletcher K
Transportation Security Agency

10:05 AM   **W2-G.2**
Modeling the uncertainty associated with commercial airline flight risk
Burns WJ
Decision Research

10:25 AM   **W2-G.3**
Individual risk assessment for terrorism
John RS, Scurich N
University of Southern California

10:45 AM   **W2-G.4**
One size does not fit all: a game-theoretic approach for dynamic and effective passenger screening
Brown M, Sinha A, Schlenker A, Tambe M
University of Southern California

9:45 AM-11:15 AM
Grand Ballroom K

W2-H Exposure to Inform Risks from Oil and Gas Development

Chair: Debra Kaden

9:45 AM   **W2-H.1**
Considerations in evaluation of potential exposures to emissions from unconventional oil and gas exploration
Jones LE
Texas Commission on Environmental Quality

10:05 AM   **W2-H.2**
Use of fast-running geospatial tools to support risk analysis and risk
Todd AL, Howard PM
ABS Group

10:25 AM   **W2-H.3**
Background exposure to metals and methane in groundwater overlying Marcellus shale gas exploitation: seminal results from Chesapeake Energy Corporations massive pre-drilling data set
Siegel DI
Syracuse University

10:45 AM   **W2-H.4**
Statistical analysis of compliance violations for natural gas wells in Pennsylvania
Abualfaraj N, Gurian PL, Olson MS
Drexel University

9:45 AM-11:15 AM
Arlington Ballroom I

W2-I Symposium: The Highest Court Draws the Highest Risk Boundary: 35 Years of Regulating under the Benzene Decision

Co-Chairs: Adam Finkel, Bernard Goldstein

9:45 AM   **W2-I.1**
Impacts of the benzene decision on OSHA and NIOSH
Howard J
National Institute for Occupational Safety and Health

10:05 AM   **W2-I.2**
Role of the benzene decision in secondary as opposed to primary prevention of risk
Goldstein BD, Carruth RS
University of Pittsburgh, University of Cologne

10:25 AM   **W2-I.3**
Not by risk alone: the benzene decision applied to air quality standards
Marchant GE
Arizona State University

10:45 AM   **W2-I.4**
Aged in the bottle: it's time to uncork the 1980 gift to analysis and public protections
Finkel AM
University of Pennsylvania, University of Michigan

9:45 AM-11:15 AM
Arlington Ballroom II

W2-J Communication Formats and Responses

Chair: Gulbanu Kaptan

9:45 AM   **W2-J.1**
The effect of the documentary film under the dome on public perception and behavioral intention toward air pollution
Qin C, Xu J, Xue L
Tsinghua University

10:05 AM   **W2-J.2**
Anchoring and adjustment in narrative and non-narrative risk messages
Steinhardt JS
Cornell University

10:25 AM   **W2-J.3**
Impact of message repetition on risk perception and attitudes toward food products
Kuttschreuter M, Hilverda F
University of Twente, Netherlands

10:45 AM   **W2-J.4**
Risk communication and 'weight-of-evidence': the state of the research
Clarke CE
George Mason University

11:30 AM-1:00 PM
Grand Ballroom A
W3-A Symposium: Multi-Disciplinary - Cognitive Testing
Chair: Randall Lutter

11:30 AM   **W3-A.1**
Cognitive test results and labor market earnings in India: evidence from expert judgment
Cooke R, Lutter R
Resources for the Future

11:50 AM   **W3-A.2**
Estimating the social benefits of improvements in cognitive test results in the US
Hafstead MA, Lutter R, Ruhm C
Resources For The Future

12:10 PM   **W3-A.3**
Breastfeeding and cognitive test performance: evidence from expert judgment
Cooke RM, Lutter R
Resources for the Future

12:30 PM   **W3-A.4**
The long term effects of breastfeeding on cognitive and educational outcomes: evidence from India
Nandi A, Laxminarayan R, Lutter RK
Center for Disease Dynamics, Economics & Policy

11:30 AM-1:00 PM
Grand Ballroom B
W3-B Symposium: Multi-Disciplinary - Too Little Information: Too Many Voices
Chair: Molly Simis

11:30 AM   **W3-B.1**
Chaos theory and the use of social media for the process of self organization during the West Virginia water contamination
Getchell MC
University of Kentucky

11:50 AM   **W3-B.2**
Fact, truth and uncertainty in an environmental and health crisis in Appalachia
Simis MJ
University of Wisconsin-Madison

12:10 PM   **W3-B.3**
The public health system's response to the 2014 West Virginia water crisis
Stoto MA, Piltch-Loeb RN, Savoia E, Wright N, Gupta R
Georgetown University

12:30 PM   **W3-B.4**
Strategic plan for research on the impacts of 21st century oil and gas development in the Appalachian region and beyond
Vorhees DJ, Abbott ZD
Health Effects Institute

11:30 AM-1:00 PM
Grand Ballroom C
W3-C Roundtable: Resilience and Risk: Similarities and Differences
Co-Chaira: Igor Linkon, Roger Pulwarty

While significant advances in the field of risk assessment have been achieved, risk-based solutions tend to focus on assessing and hardening individual component of complex systems under specific threat scenarios. Realization of the inability to predict threats resulted in significant interest in resilience-based management which is focused on the ability of a system to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events. Resilience thus uses strategies of adaptation and mitigation to augment traditional risk management. The panel will focus on the needs for resilience-based management and ways in which decision makers could enhance resilience. Methods and tools that are able to reconcile conflicting information, as well as the complex context of the decision making environment will be discussed. The Panel will include top executives from the US Government who will discuss needs in developing the global risk and resilience communities in the context of global threats and disasters and challenges in promoting Resilience within their organizations

Participants Include:
Bostick LTG, Bamford H, Ijjasz-Vasquez
USACE Commanding General, Department of Commerce, World Bank

11:30 AM-1:00 PM
Grand Ballroom DE
W3-D Multi-Disciplinary - Historical and Contemporary Applications - II
Co-Chairs: Thomas Webler, Andreas Klinke

11:30 AM   **W3-D.1**
Technologies for civic science: environmental monitoring to inform decisions for cumulative health protection
MacDonell M, Chang YS, Parker A, Martinez B, Kuhn K, Dvorak K, Loftin B, Nutt WS, Camacho Velazquez L, Virella N
Argonne National Laboratory, US Environmental Protection Agency, Chicago State University

11:50 PM   **W3-D.2**
Concern assessment in the analytic deliberative process
Webler T
Western Washington University

12:10 PM   **W3-D.3**
Portfolio decision modeling in public health for designing optimal control strategies: the case of cholera
Liu Y, Convertino M
University of Minnesota

12:30 PM   **W3-D.4**
Development of an integrated risk-benefit assessment model to evaluate the health impact of breast milk and infant formula diets
Boué G, Cummins E, Guillou S, Membré JM, Le Bizec B, Antignac JP
Oniris, Univesity College of Dublin

11:30 AM-1:00 PM
Grand Ballroom FG
W3-E Multi-Disciplinary - Ebola I
Co-Chairs: Janet Yang, Abraham Benavides

11:30 AM   **W3-E.1**
Modeling communication and trust networks in ebola response: institutional collective action framework
Andrew SA, Arlikatti S
University of North Texas

11:50 AM   **W3-E.2**
Spontaneous planning, governance structure, and a public health emergency: ebola in Dallas, Texas
Benavides AD, McEntire D, Carlson E, Keyes L
University of North Texas

12:10 PM   **W3-E.3**
Risk perception and communication behaviors during the Ebola outbreak
Yang ZJ
SUNY at Buffalo

12:30 PM   **W3-E.4**
An assessment of cultural dimensions of Ebola virus disease causation in Guinea
Lahm S, Roess A
George Washington University

11:30 AM-1:00 PM

Grand Ballroom J

W3-G Multi-Disciplinary - Potpourri

Chair: Diana Marquez

11:30 AM   W3-G.1
ITRC publishes a new risk assessment resource to support decision-making using site-specific risk assessment
McVey J, Sorrentino C, Mathrani V, Messer RC, Marquez DY, Selco B, Long K, Strake E
ITRC Risk Assessment Team

11:50 AM   W3-G.2
Biomonitoring equivalents for interpretation of silver biomonitoring data in a risk assessment context
Aylward LL, Bachler G, von Goetz N, Hays SM
Summit Toxicology, LLP; ETH

12:10 PM   W3-G.3
A model of nanomaterial trophic transfer driven by surface interactions
Geitner NK, Wiesner M
Duke University

12:30 PM   W3-G.4
Food safety risk factors associated with the sale of finfish via the internet
Lam W, Hallman WK, Senger-Mersich A, Godwin S, Chen F, Schaffner D
Rutgers, The State University of New Jersey

12:50 PM   W3-G.5
Probabilistic risk assessment of nanoscale silver particles exposed to infant population through ingestion
Pang C, Hristozov D, Zabeo A, Tsang M, Semenzin E, Sayre P, Marcomini A
Cat Foscari University of Venice, Italy

11:30 AM-1:00 PM

Grand Ballroom K

W3-H Multi-Disciplinary - Catastrophes: Vulnerabilities and Responses

Chair: Kelly Klima

11:30 AM   W3-H.1
A heat vulnerability index and adaptation solutions for Pittsburgh, Pennsylvania
Bradford K, Hegglin M, Abrahams L, Klima K
Carnegie Mellon University

11:50 AM   W3-H.2
Perceptions and realities of flood risk and mitigation in the Midwest US: an interdisciplinary approach
Casagrande DG, Pinter N, McIlvaine-Newsad H
Lehigh University, Southern Illinois University, Western Illinois University

12:10 PM   W3-H.3
A performance-based insurance rating for leveed areas in communities participating in the national flood insurance program
Esfandiary S
FEMA

12:30 PM   W3-H.4
CBOs and social-ecological resilience under catastrophic events: a study on flood victims at Hakaluki Haor in Bangladesh
Uddin MF
Shahjalal University of Science and Technology

11:30 AM-1:10 PM

Arlington Ballroom I

W3-I Symposium: Show Me the Data!

Chair: Julie Goodman

11:30 AM   W3-I.1
How a sensitivity analysis of raw data would strengthen EPA's chlorpyrifos risk assessment
Goodman JE, Loftus CT, Rhomberg LR, Lynch HN
Gradient

11:50 AM   W3-I.2
Sharing epidemiological research data: the re-analysts' perspective
Mundt KA, Dell LD
Ramboll Environ

12:10 PM   W3-I.3
Non-cancer risk assessment of Libby amphibole asbestos
Zu K, Tao G, Lynch HN, Kerper LE, Goodman JE
Gradient

12:30 PM   W3-I.4
Legal perspectives on data sharing
Biles BA, Daneker MD
Arnold & Porter LLP

12:50 PM   Discussion

11:30 AM-1:00 PM

Arlington Ballroom II

W3-J Helmholtz Alliance ENERGY-TRANS: Future Infrastructures for Meeting Energy Demands. Towards Sustainability and Social Compatibility

Chair: Pia-Johanna Schweizer

11:30 AM   W3-J.1
Integrated scenario building in energy transition research
Poganietz WR
University of Stuttgart

11:50 AM   W3-J.2
The transformation of the Germany electricity system - risk and innovation
Fuchs G
University of Stuttgart

12:10 AM   W3-J.3
Trust as a source of risk? Implications from the Germany Energy Transition
Sumpf P, Büscher C
KIT-ITAS

12:30 PM   W3-J.4
Planning and governance - the potential of public participation and stakeholder involvement to facilitate the German energy transition
Schweizer PJ
University of Stuttgart

1:15 PM-2:45 PM
Grand Ballroom A

W4-A Roundtable: Exploring Influences of the Microbiota on Innate Immunity and Microbial Dose-Response Relationship

Chair: Margret Coleman

We will join risk practitioners and regulators in posing and discussing researchable questions and approaches to advance microbial dose-response studies to account for the presence and absence or compromise of the indigenous microbiota. The strengths and limitations of the culture-based and culture independent methods for microbial prevalence and abundance will be considered for both exposure and dose-response assessments. Available dose-response datasets will be identified that illustrate 'colonization resistance', the dose-dependent interaction of microbiomes that protect hosts from low levels of pathogens ingested, inhaled, or contacting the skin or mucosal surfaces. Diverse pathogens and model systems will be considered for future experimental work in human and animal models (in vivo and in vitro). As NextGen chemical risk assessment is evolving with expanding knowledge of computational toxicology, so evolution of NextGen microbial risk assessment incorporate scientific innovations that advance our knowledge of human microbiomes in health and disease. Panelists and the audience will consider some test cases to develop more biologically relevant models for prediction of the likelihood and severity of diseases of the respiratory, skin, and gastrointestinal systems from low dose exposures to pathogens in the midst of diverse and abundant populations of human microbiota.

Participants Include:

Mongodin EF, Shirtliff ME, Solano-Aguilar G, Payne-Virostko A, Dearfield K, Elkins CA, McClellan G

1:15 PM-2:45 PM
Grand Ballroom B

W4-B Presidential Session: Weight of Evidence and Standard of Proof: A Nexus

Chair: Kevin Brand
Co-sponsored by: Economics and Benefits Analysis Specialty Group

1:15 PM   W4-B.1
The accounts table for weighing diverse lines of evidence to assess causality
Rhomberg LR, Bailey LA*
Gradient

1:35 PM   W4-B.2
Value based weight of evidence
Brand KB
University of Ottawa

1:55 PM   W4-B.3
Distribution and evolution of individual and group perspectives on weight of evidence
Small MJ
Carnegie Mellon University

2:15 PM   W4-B.4
Weight of evidence and collaborative practices
Douglas HE
University of Waterloo

1:15 PM-2:45 PM
Grand Ballroom C

W4-C Symposium: The New Biology of Risk: New Roles for Genetics and Epigenetics in Risk-Based Decision-Making

Chair: Gary Marchant

1:15 PM   W4-C.1
Genomic data in regulatory agency risk-based decision-making
Marchant GE, Stevens YA
Arizona State University, College of Law

1:35 PM   W4-C.2
Legal and policy: applications of genetics and epigenetics continue to expand in personal injury litigation
Hartley KT
LSP Group LLC

1:55 PM   W4-C.3
Epigenetics and risk assessment: the dawn of a new era
McCullough SD, Fortin MC
US Environmental Protection Agency, Rutgers University

2:15 PM   W4-C.4
Risk tolerance in the context of genetic risks
Bouder FE
Maastricht University

1:15 PM-2:45 PM
Grand Ballroom DE

W4-D Data Quality and Application to Regulatory Decisions

Chair: Alison Willis

1:15 PM   W4-D.1
Uncertainty and nonlinearity in life cycle impact assessment models
Collier ZA, Mayo M, Winton C, Chappell MA
University of Virginia

1:35 PM   W4-D.2
Can BSAF be used successfully to help set sediment remediation goals?
LaVelle JM, King TW, Blischke E
CDM Smith

1:55 PM   W4-D.3
A tiered approach to investigate metal contamination in unfinished natural materials used in children's products
Patterson J, Kroner O, Lee D, Willis A
Toxicology Excellence for Risk Assessment (TERA)

2:15 PM   W4-D.4
Ecological preliminary remediation goals for soils at the Los Alamos National Laboratory
Ryti RT, McDermott GW
Neptune and Company, Inc.

1:15 PM-2:45 PM
Grand Ballroom FG

W4-E Symposium: Strategic Decision-Making for Infrastructure Safety and Security

Chair: Salazar Chatterjee

1:15 PM   W4-E.1
Analysis of layered security portfolios under uncertainty
Chatterjee S, Salazar D
Pacific Northwest National Laboratory

1:35 PM   W4-E.2
How much should we spend on preparing for disruptions?
MacKenzie CA
Iowa State University

1:55 PM   W4-E.3
A multi-scale analysis of interdependent national infrastructure network criticalities, vulnerabilities and risks
Thacker S, Pant R, Hall JW, Barr S, Alderson D
University of Oxford

2:15 PM   W4-E.4
Engineering resilience of interdependent critical infrastructures
Nan C, Sansavini G
ETH Zurich

1:15 PM-2:45 PM

Grand Ballroom H

W4-F Symposium: Foundational Issues in Risk Analysis II

Chair: Seth Guikena

1:15 PM   **W4-F.1**

Design of early warning systems based critical transition metrics

Damnjanovic ID

Texas A&M University

1:35 PM   **W4-F.2**

Warnings, warning signals, and the dynamics of risk

Goble RL

Clark University

1:55 PM   **W4-F.4**

A comparative study of risk analysis across disciplines

Jensen A, Aven T

University of Stavanger

2:15 PM   **W4-F.5**

Threats to come: a blast from the past

Eisinger F

INSERM, FrancePaoli-Calmettes Institute Marseille, France

1:15 PM-2:45 PM

Grand Ballroom J

W4-G Cautions in Assessing Risk from Occupational Epidemiology

Chair: Adam Finkel

1:15 PM   **W4-G.1**

HEI diesel epidemiology project part II. Diesel emissions and lung cancer: epidemiology and quantitative risk assessment

Walker KD, Krewski D, Demers P, Foster D, Kaufman J, Levy J, Poole C, Van Tongeren M, Woskie S

Health Effects Institute

1:35 PM   **W4-G.2**

Detailed characterization and hazard level analysis of the ambient fine and ultrafine particulate mixture at a construction site

Ilci F, Gernand JM

The Pennsylvania State University, National Institute of Occupational Safety and Health

1:55 PM   **W4-G.3**

Empirical comparison of fine particulate matter exposure concentrations in North Carolina State University campus buses and a personal passenger car

Delavarrafiee M, Frey HC

North Carolina State University

2:15 PM   **W4-G.4**

Occupational health risk assessment of gallium arsenide

Wu CH, Hsu CL, Wu KY

National Taiwan University

1:15 PM-2:55 PM

Grand Ballroom K

W4-H Symposium: Cumulative Risk Analysis Considerations Related to Evaluating Exposure to Multiple Stressors

Co-Chairs: Ellen Kirrane, Michael Wright

1:15 PM   **W4-H.1**

The Biomonitoring, Environmental Epidemiology, and Short-lived Chemicals (BEES-C) instrument: implications for assessing study quality in risk assessments

LaKind JS

LaKind Associates, LLC

1:35 PM   **W4-H.2**

Evaluation of in utero exposures to environmental pollutants and consideration for cumulative risk estimation

Sams RL, Kirrane EF, Wignall JA, Cawley MA, Turley AT, Gift JS, Cowden JW, Hotchkiss AK

US Environmental Protection Agency

1:55 PM   **W4-H.3**

The cumulative impact of blood lead level and sociodemographic factors on decrements in children's intelligence quotient: a potential explanation for a nonlinear concentration-response relationship

Patel MM, Coffman E, Cohen J, Eftim S, Hubbard H, Svendsgaard D, Datko-Williams L, Kirrane E

US EPA, ICF International, Oak Ridge Institute for Science and Education

2:15 PM   **W4-H.4**

Metal mixtures in urban and rural populations in the US: implications for cardiovascular disease prevention

Pang Y, Peng RD, Jones MR, Francesconi KA, Goessler W, Howard BV, Umans JG, Best LG, Guallar E, Post WS, Kaufman JD, Vaidya D, Navas-Acien A

Johns Hopkins Bloomberg School of Public Health

2:35 PM   **W4-H.5**

Integrating occupational risk factors and considerations into cumulative risk assessment

Dotson GS

Centers for Disease Control and Prevention/ National Institute for Occupational Safety and Health

---

1:15 PM-2:45 PM

Arlington Ballroom I

W4-I Symposium: Using Mechanistic Data to Build Adverse Outcome Pathways for Health Risk Assessment

Co-Chairs: Janice Lee, Ingrid Druwe

1:15 PM   **W4-I.1**

Merging Adverse Outcome Pathway (AOP) and Mode of Action (MOA) frameworks: assembling knowledge for use in risk assessment

Edwards SW, Oki N, Bell S, Nelms M, Leonard J, Tan YM

US Environmental Protection Agency, Oak Ridge Institute for Science and Education

1:35 PM   **W4-I.2**

Application of an Adverse Outcome Pathway (AOP) framework to evaluate species concordance and human relevance of Dibutyl Phthalate (DBP)-induced toxicity to the male reproductive system

Arzuaga X, Cooper G, Hotchkiss A

US Environmental Protection Agency

1:55 PM   **W4-I.3**

Building disease-based AOPs for risk assessment: from molecular pathways to human hazard identification

Druwe IL, Bell SM, Burgoon LD

Oak Ridge Institute for Science and Education, ILS/Contractor Supporting the NTP Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM), US Army Engineer Research and Development Center

2:15 PM   **W4-I.4**

Tools and strategies to organize data and decisions for AOP development

Wignall JA, Turley A, Ross P, Henning C, Lee J

ICF International, US EPA

1:15 PM-2:45 PM

Arlington Ballroom II

W4-J Communication and Health Issues

Chair: Katherine McComas

1:15 PM   **W4-J.1**

Trust, perception and response in indigenous health risk communication: the case of lead exposure and Inuit health

Boyd AD, Furgal CM, Driedger SM, Jardine CG

Washington State University, Trent University, University of Manitoba, University of Alberta

1:35 PM   **W4-J.2**

Engaging Aboriginal youth in health promotion using visual media: the value of a strength-based approach to address health risks

Jardine CG, Genuis SK, Lukasevich M, Tang K

University of Alberta

1:55 PM   **W4-J.3**

Different strokes for different folks: the influence of primary care providers on patient decision making about breast and prostate cancer screening

Driedger SM, Annable G, Brouwers M, Corso Z

University of Manitoba, McMaster University

2:15 PM   **W4-J.4**

Mental models of food recalls and foodborne illnesses: identifying critical gaps in consumers' understanding

Kaptan G, Fischhoff B

University of Leeds and Carnegie Mellon University

3:00 PM-4:40 PM
Grand Ballroom A

W5-A Symposium: Moving Towards a Harmonized Risk Assessment Process
Chair: Debra Kaden

3:00 PM   **W5-A.1**
Science and decisions: how a unified approach to risk assessment improves both
Rodricks JV
Ramboll Environ

3:20 PM   **W5-A.2**
Approaches to integrated evaluation of cancer and noncancer endpoints under consideration at US EPA
Cote IL, Flowers L, Cogliano VJ
US Environmental Protection Agency

3:40 PM   **W5-A.3**
European approach and selected case studies on cancer risk assessment
Pease CK
Ramboll Environ

4:00 PM   **W5-A.4**
Practical integration of old and new evidence streams with a harmonized dose-response assessment tool developed by WHO/IPCS
Chiu WA
Texas A&M University

4:20 PM   **W5-A.5**
Caveats and challenges in harmonizing quantitative risk assessments for cancer and noncancer risk
Rhomberg LR
Gradient

3:00 PM-4:40 PM
Grand Ballroom B

W5-B Symposium: Measuring Capacity to Manage Health Risks
Chair: Sandra Hoffman
Co-sponsored by: Society for Risk Analysis

3:00 PM   **W5-B.1**
New insights into food safety research
Husbands Feeling K, Lane J
Georgia Institute of Technology

3:20 PM   **W5-B.2**
Research big data: identifying food safety science with novel computational tools
Klochikhin E
American Institutes for Research

3:40 PM   **W5-B.3**
Quantifying benefits for government medical research budgeting
Greidinger SJ
Predictive Health Solutions

4:00 PM   **W5-B.4**
Risk assessment of extreme weather patterns on commercial fishing vessels in Canadian Atlantic waters
Rezaee S, Pelot R
Dalhousie University

4:20 PM   **W5-B.5**
Use of internet data to evaluate capacity in the global food safety certification industry
Boys KA, Caswell JA, Hoffmann SA
North Carolina State University, University of Massachusetts Amherst, USDA Economic Research Service

3:00 PM-4:40 PM
Grand Ballroom C

W5-C Symposium: HowSAFE: Lessons from Varieties of Risk Regulation Across Europe
Chair: Frederic Bouder

3:00 PM   **W5-C.1**
Varieties of risk regulation and the problem of trade-offs in Europe
Rothstein H, Beaussier A-L, Borraz O, Bouder F, Demeritt D, de Haan M, Huber M, Paul R, Wesseling M
King's College London

3:20 PM   **W5-C.2**
Risk based regulation of quality in European higher education
Huber MMH
University of Bielefeld, Department of Sociology, Law & Society Unit

3:40 PM   **W5-C.3**
Risk-managing the "no unsafe" food goal in Europe
Bouder FB
Maastricht University

4:00 PM   **W5-C.4**
When is safe safe enough? Comparing risk-based inspection regimes in Europe
Borraz O, Beaussier AL, Hermans M, Paul R, Wesseling M
Center for the Sociology of Organisations (CNRS-Sciences Po)

4:20 PM   **W5-C.5**
Risk prevention, compensation and the political economy of insurance
Beaussier AL, Demeritt D, Rothstein H
King's College London

3:00 PM-4:30 PM
Grand Ballroom DE

W5-D Emergency and Risk Planning
Chair: Hana Putnam

3:00 PM   **W5-D.1**
Using hybrid optimization heuristic to allocate blood transfers among US Regions in simulated earthquakes
Ezzeldin H, Forshee R, Simonetti A
Office of Biostatistics and Epidemiology, CBER, FDA

3:20 PM   **W5-D.2**
Gap analysis of community risk planning for climate changes to extreme weather events
Galluppi KJ, Putnam H, Coughenour D, Selover NJ, Chhetri N, Roy M
Arizona State University, City of Flagstaff Az

3:40 PM   **W5-D.3**
Implementation of the national contingency plan
Aaltonen MA
Virebit Oy Riihimaki Finland

4:00 PM   **W5-D.4**
Implementation of oil spills contingency plan: a dialogue between European Union and Brazil
Alves EN
Engine Engineering

3:00 PM-4:40 PM
Grand Ballroom FG

W5-E Engineering and Infrastructure: Managing Risks for Energy Infrastructure Systems
Co-Chairs: Andra Staid, Eva Andrijic

3:00 PM   **W5-E.1**
Roadmap for commercialization of vehicle-to-grid technology in logistics fleet vehicles
Brannon MC, Lambert JH, Slutzky DL, Wheeler JP
University of Virginia; and Fermata LLC

3:20 PM   **W5-E.2**
Impact of decentralization and renewable energy generation on outages and economic losses
Cuvilliez AL, Fischer M
Stanford University

3:40 PM   **W5-E.3**
Public acceptance of high-voltage power lines in the context of the energy transition
Suetterlin B, Siegrist M
ETH Zurich

4:00 PM   **W5-E.4**
A multidimensional efficent frontier? An appraoch to evaluating the entire portfolio of electric and gas utilities
White R
California Public Utilties Commission

4:20 PM   **W5-E.5**
Risk-based technology roadmap for alternative fuels
Connelly EC, Lambert JH, Clarens AF, Colosi LM
University of Virginia

3:00 PM-4:40 PM	3:00 PM-4:30 PM	3:00 PM-4:40 PM	3:00 PM-4:40 PM	3:00 PM-4:40 PM
Grand Ballroom H	*Grand Ballroom J*	*Grand Ballroom K*	*Arlington Ballroom I*	*Arlington Ballroom II*

W5-F Microbial Dose-Response
Co-Chairs: Regis Pouillot, Mark Walderhaug

3:00 PM   W5-F.1
Spurious models and structural non-identifiability: pitfalls in the quest for a norovirus dose-response model with good fit
Schmidt PJ
Independent Microbial Risk Assessment Researcher

3:20 PM   W5-F.2
Probabilistic simulated modeling for incidence of illness reduction with temporary acquired immunity in fractional poisson model for norovirus
Owusu-Ansah EDJ, Hald IT, Amponsah SK, Abaidoo RC, Dalsgaard A
Kwame Nkrumah Univ of Sci and Tech and University of Copenhagen, Technical University of Denmark

3:40 PM   W5-F.3
Exploring influences of the microbiota on innate immunity and microbial dose-response relationships
Solano-Aguilar GI
Agricultural Research Service-US Department of Agriculture

4:00 PM   W5-F.4
Impact of decolonization on the human microbiota
Mongodin EF
University of Maryland

4:20 PM   W5-F.5
Visual-DR: a microbial dose response visualization and optimization tool for QMRA students and novices
Weir MH, Flynn W, Mitchell J, Pope JM
Temple University

W5-G Multi-Disciplinary - Ebola II
Chair: Le (Betty) Zhou

3:00 PM   W5-G.1
Ebola stigma and its repercussions on immigrant livelihoods in Dallas, Texas
Nibbs F, Smith-Morris C
Soutern Methodist University

3:20 PM   W5-G.2
Assessing the accuracy and consistency of Ebola risk perceptions and behaviors
Wong-Parodi G, Fischhoff B, Rose Garfin D, Holman EA, Cohen Silver R
Carnegie Mellon University, University of California, Irvine

3:40 PM   W5-G.3
Explaining variations in Americans' beliefs, attitudes and reported behaviors regarding Ebola
Johnson BB
Decision Research

4:00 PM   W5-G.4
Ebola-related information wanted and obtained by healthcare providers
Xie B, Zhou L, Yoder LH, Johnson KE, Kim M, Garcia AA
University of Texas at Austin and University of Minnesota

W5-H Symposium: Foundational Issues in Risk Analysis III
Chair: Scott Ferson

3:00 PM   W5-H.1
Computing with confidence
Ferson S
Applied Biomathematics

3:20 PM   W5-H.2
On objective risk
Calabrese EJ, Shamoun DY
University of Massachusetts at Amherst/Mercatus Center at George Mason University

3:40 PM   W5-H.3
A perspective on the relation between risk and prediction
Goerlandt F
Aalto University

4:00 PM   W5-H.4
The Foundation of Risk Analysis - a pragmatic versus an epistemological approach
Lindaas OA
University of Stavanger

4:20 PM   W5-H.5
Causal analytics for improving risk regulation
Cox LA
Cox Associates and University of Colorado

W5-I Decision Approaches: from Genetically Engineered Plants to HIV
Chair: Matthew Wood

3:00 PM   W5-I.1
A weed risk assessment model for genetically engineered plants in the United States
Vieglais CM, Bodnar AL, Hegde SG, Pearson AM
US Department of Agriculture Animal and Plant Health Inspection Service (USDA APHIS)

3:20 PM   W5-I.2
Missing the forest for the trees? Nutrient-centrism and perceptions of disease risk
Schuldt JP, Pearson AR
Cornell University

3:40 PM   W5-I.3
Mitigation of emerging infectious diseases on small scale livestock farms in Vietnam
Hall DC, Le QB
University of Calgary

4:00 PM   W5-I.4
Benefit-risk assessment of reducing transfusion-transmitted babesiosis by testing blood donations
Forshee RA, Simonetti A, Menis M, Anderson S, Kumar S
US FDA/CBER

4:20 PM   W5-I.5
A computational tool for risk assessment of transfusion transmitted infections associated with behavior-based risk factors
Simonetti A, Abdelaziz K, Zhang G, Kreimeyer K, Chada K, Yang H
US FDA/CBER and Engility Corporation

W5-J Coverage of Risks in (Social) Media
Chair: Margot Kuttschreuter

3:00 PM   W5-J.1
Journalists' perceptions of environmental, health and societal fracking risks
Friedman SM, Egolf BP
Lehigh University

3:20 PM   W5-J.2
Ebola outbreak 2014: media coverage and public risk perceptions in the United States
Wirz CD
University of Wisconsin- Madison

3:40 PM   W5-J.3
Declining coverage of risks from shale gas development
Evensen D, Clarke C, Ashmoore O
Cardiff University

4:00 PM   W5-J.4
Understanding dynamic communication, risk perception, and decisions during Hurricane Sandy through analysis of Twitter data
Demuth JL, Morss RE, Palen L, Stowe K, Anderson J, Kogan M, Anderson K
NCAR

4:20 PM   W5-J.5
Online risk talk: an analysis of real time public risk perceptions about terrorism
Sutton J, Lane D, Williams G, Burns W, Slovic P
University of Kentucky

Author Index

Author Index

Crystal Gateway Marriott - Floorplans

GRAND BALLROOM

SALON D
SALON E
SALON F
SALON G

SALON C
SALON H

SALON B
SALON J

SALON A
SALON K

BUSINESS CENTER

CONVENTION REGISTRATION

BRIDGE

ESCALATORS

MEZ

SKY VIEW

GRAND OFFICE

REST ROOMS

ELEVATORS

RESTROOMS

ASSEMBLY AREA

ESCALATORS

CONVENTION REGISTRATION

SALON I
SALON II

SALON III

ARLINGTON BALLROOM

SALON IV

SALON V

SALON VI

SERVICE CORRIDOR

Crystal Gateway Marriott - First Level

ARLINGTON BALLROOM

1 2 3 4 5 6

Built-In Registration

FOYER AREA
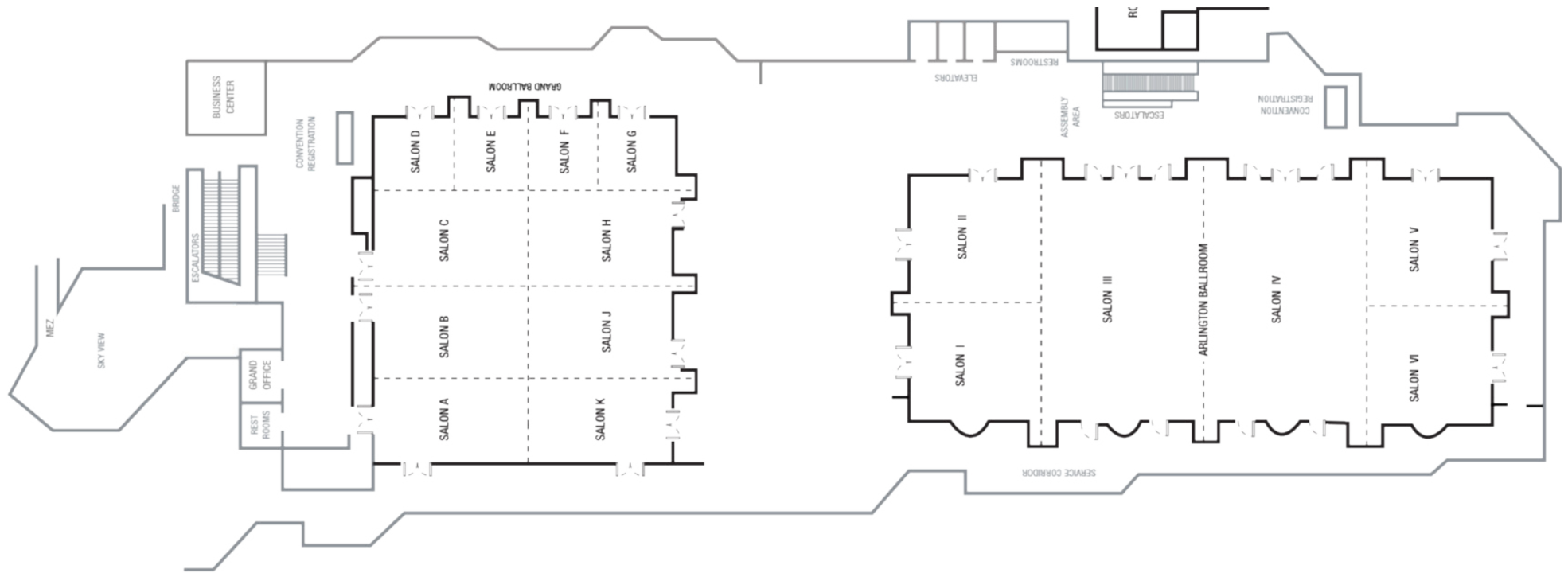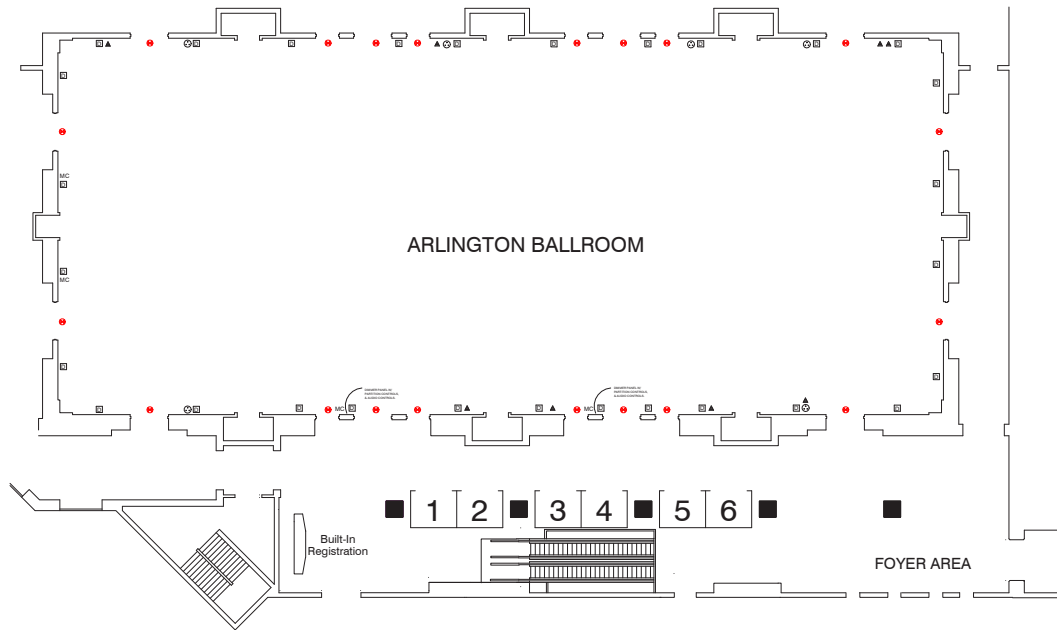
Crystal Gateway Marriott - First Level Exhibits

ROSSLYN I

ROSSLYN II

SECOND FLOOR

FAIRFAX BOARD ROOM

ALEXANDRIA

MC LEAN

MT. VERNON

MANASSAS
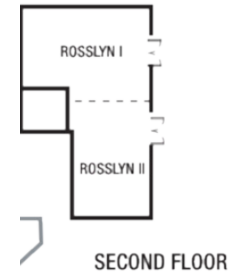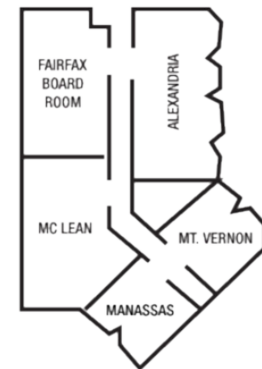
Crystal Gateway Marriott - Second Level

JEFFERSON

MADISON

LEE

JACKSON
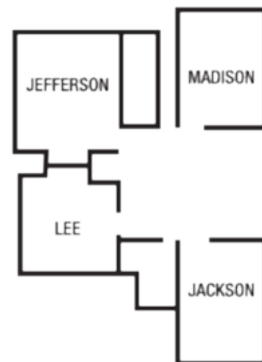
Crystal Gateway Marriott - Lobby Level

Notes