



FINAL PROGRAM

New Orleans, LA • December 2 - 6, 2018

 **SRA 2018**
RISK ANALYSIS • The Many Faces of Risk



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Society For Risk Analysis Annual Meeting

2018 Final Program

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Meeting Highlights

Meeting Events! Most events take place at the New Orleans Marriott. Start with the opening reception on Sunday, December 2, 6:00-7:30 PM (Cash Bar), and continue to the closing T-shirt Giveaway and Raffle (with the possibility of winning registration to the 2019 Annual Meeting), Wednesday, December 5, 5:00 PM. The meeting includes three plenary sessions, and complimentary box lunch on Monday, Awards Banquet lunch on Tuesday (comes with your registration), and a Plenary Luncheon on Wednesday (included also in your registration fee). Don't forget workshops on Sunday and Thursday - there is still room!

Meeting Theme – “*Risk Analysis – The Many Faces of Risk*” highlights the important role risk analysts have in tackling risk problems and improving the science and practice of risk analysis.

Poster Reception! The meeting will feature a poster reception with food and drinks 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 5 for Hours

If you are presenting an oral presentation, don't forget to upload your presentation in the Speaker Ready Room (Rhythm Office, 4th Floor) at least 24 hours prior to your presentation. If you have already uploaded your presentation file, come by the Ready Room to ensure it has been received and uploaded correctly.

Looking for WiFi?

Network: Society for Risk Analysis
Access Code: sra2018no

Plenary session on Monday begins at 8:30 AM so plan to arrive early!

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Conference Hotel

New Orleans Marriott

555 Canal Street, New Orleans, LA 70130

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Conference Events, Committee Meetings

Sunday, December 2

2019 World Congress

Program Committee Meeting

9:00 AM–5:00 PM - *Studio 10, Second Floor*

SRA Council Meeting

12:00 PM–5:00 PM - *Galerie 5, 2nd Floor*

Editorial Staff Meeting

3:00 PM–5:00 PM - *Galerie 4, 2nd Floor*

Editorial Board Meeting

5:00 PM–6:00 PM - *Galerie 4, 2nd Floor*

SRA Welcome Reception

6:00 PM–7:30 PM - *Arcadia, 3rd Floor*

Monday, December 3

New Member, Student/Young Professionals Breakfast

7:00 AM–8:00 AM - *Bissonet, 3rd Floor*

All SRA Students, Young Professionals, and 2017 and 2018 New Members (badges with a New Member ribbon) are welcome to attend.

Publications Committee Meeting

7:00 AM–8:00 AM - *Beauregard, 5th Floor*

Finance Committee

7:00 AM–8:30 AM - *Galvez, 5th Floor*

Conferences & Workshops Committee Meeting

7:30 AM–8:30 AM - *Audubon, 5th Floor*

Opening Plenary Session

8:30 AM–10:00 AM - *Acadia, 3rd Floor*

Specialty Group Meetings

12:10 PM–1:25 PM - *See page 5*

SRA Fifth World Congress on Risk, Cape Town, 2019

5:00 PM–6:00 PM - *Audubon, 5th Floor*

Poster Reception

6:00 PM–8:00 PM - *Preservation Hall, 2nd Floor*

SRA Student and Young Professionals Social

8:30 PM–10:00 PM

Offsite: Sneaky Pete's - 135 Chartres Street

Tuesday, December 4

Grad Student Breakfast

7:00 AM–8:00 AM - *Napoleon, 41st Floor River Tower*

Audit Committee Meeting

7:00 AM–8:00 AM - *Audubon, 5th Floor*

Communications Committee Meeting

7:30 AM–8:30 AM - *Beauregard, 5th Floor*

Regions Committee Meeting

7:30 AM–8:30 AM - *Galvez, 5th Floor*

Plenary Session

8:30 AM–10:00 AM - *Acadia, 3rd Floor*

SRA Awards Luncheon and Business Meeting

12:00 PM–1:30 PM - *Acadia, 3rd Floor*

Specialty Group Mixers

6:00 PM–8:00 PM - *See page 5*

SRA Council Meeting

6:30 PM–10:00 PM - *Riverview 2, 41st Floor River Tower*

Wednesday, December 5

Environment, Systems, Decisions

Editorial Board Meeting

7:00 AM–8:00 AM - *Beauregard, 5th Floor*

Specialty Group Chair Breakfast

7:30 AM–8:30 AM - *Audubon, 5th Floor*

Education Committee Meeting

7:30 AM–8:30 AM - *Galvez, 5th Floor*

Plenary Luncheon

12:00 PM–1:25 PM - *Acadia, 3rd Floor*

Included in registration fee

T-shirt Giveaway and Raffle

5:00 PM–5:30 PM - *Galerie Booth, 2nd Floor*

Possibility of winning registration to the 2019 Annual Meeting

*** Three Lunches Included *** in your Registration Fees

Monday Box Lunch,
Tuesday Awards Banquet,
Wednesday Plenary Luncheon

Please see the registration desk
if you have dietary restrictions

All Meetings Are Open

All meetings announced in this
program are open, everyone is welcome
and encouraged to attend.

2018 Specialty Group Winners

Applied Risk Management

Ramin Moradi

Decision Analysis and Risk

Jorge Gonzalez Ortega

Dose-Response

Zheng Zhou

Ecological Risk Assessment

Mariana Cains

Economics and Benefits Analysis

Marwan Alsultan

Emerging Nanoscale Materials

Sarah Davidson

Engineering and Infrastructure

Huiling Hu
Renee Obringer

Exposure Assessment

Zheng Zhou

Foundational Issues in Risk Analysis

Greg Heon

Microbial Risk Analysis

Shraddha Karanth
Onay Burak Dogan

Resilience Analysis

Rahim Ali

Risk and Development

Alexa Wood

Risk Policy & Law

John Lindberg

Security & Defense

Rohit Suresh

Student and International Travel Award Winners

Rahim Ali

Marwan Alsultan

Amin Aria

Matthew Baucum

Mariana Cains

Paul Chakalian

Chang Ching Hsiang

Kuan-Fu Cho

Haoran Chu

Cristobal De La Maza

Juliana De Oliveira Mota

David Desmet

Onay Burak Dogan

Winifred Ekezie

Jorge Gonzalez Ortega

Emily Howell

Chia Sheng Hsieh

Ching-Yu Hsu

Hsiao-Hsuan Hsu

Huiling Hu

Shih-Ya Huang

Caroline Johnson

Elnaz Kabir

Shraddha Karanth

Aravind Kundurpi

John Lindberg

Sixiao Liu

Tom Logan

Lauren Lutzke

Deniz Marti

Robyn Miranda

Ramin Moradi

Alexis Mraz

Renee Obringer

Benjamin Rachunok

Surabhi Rani

Abby Roche

Nikita Saha Turna

Ido Sivan-Sevilla

Rohit Suresh

Alexa Tanner

Unal Tatar

George Warren

Erica Wood

Alexa Wood

Peng Xiao

Mu-Ting Yen

Zheng Zhou

Fabiane Acordes

Jalal Ali

Daniel Andrews

Godfrey Ariavie

Barbara Company

Travis Carless

Amaury Caruzzo

Lo Chiao-Ying

Yu-Ting Chin

Ting-Hsuan Chou

Chris Elemuwa

Larissa Ferentz

Kieran Findlater

Sabina Halappanavar

Scott Hanson-Easey

Feng-Chih Kang

Ali Khamesipour

Ruth Kutalek

Po Han Lin

Wolfgang Maurer

Edison Arwanire Mworozu

Apurva Narayan

Murilo Noli Da Fonseca

Md Rasheduzzaman

Jose Serrano

Danyelle Stringari

Kousuke Takahashi

Lai Ting-Ju

Dominique A. Vuitton

Wan Mohd Zulhafiz Bin Wan

Zahari

Pei-Wen Wu

Xingning Xiao

Hwq-Lung Yu

Committee Meetings and Events

Specialty Group Meetings

Monday, December 3 - 12:10-1:25 PM

All specialty group meetings will take place during lunch time. Pick up your box lunch near the registration desk and attend the meeting(s) of your choice.

12:10-12:45 PM

- Dose Response (DRSG), *Galerie 5, 2nd Floor*
- Economics & Benefits Analysis (EBASG), *Galerie 2, 2nd Floor*
- Occupational Health & Safety (OHSSG), *Galerie 3, 2nd Floor*
- Risk Communication (RCSG), *Galerie 6, 2nd Floor*
- Security & Defense (SDSG), *Salon A-C, Third Floor*
- Ecological Risk Assessment (ERASG), *Salon D, Third Floor*
- Foundational Issues in Risk Analysis (FRASG), *Salon E, Third Floor*
- Risk, Policy & Law (RPLSG), *Salon F-H, Third Floor*

12:50-1:25 PM

- Exposure Assessment (EASG), *Galerie 5, 2nd Floor*
- Risk & Development (RDSG), *Galerie 2, 2nd Floor*
- Applied Risk Management (ARMSG), *Galerie 3, 2nd Floor*
- Decision Analysis & Risk (DARSG), *Galerie 5, 2nd Floor*
- Emerging Nanoscale Materials (ENMSG), *Salon A-C, Third Floor*
- Engineering & Infrastructure (EISG), *Salon D, Third Floor*
- Microbial Risk Analysis (MRASG), *Salon E, Third Floor*
- Resilience Analysis Specialty Group Meeting (RASG), *Salon F-H, Third Floor*

Specialty Group Mixers

Tuesday, December 4 - 6:00-8:00 PM

- Mixer 1 - DRSG, MRASG, EASG, ARMSG
Barcadia - Back Bar, 601 Tchoupitoulas Street, New Orleans, LA 70130
- Mixer 2 - SDSG, DARSG, EISG, FRASG
Ohm Lounge - Barcadia, 601 Tchoupitoulas Street, New Orleans, LA 70130
- Mixer 3 - RCSG, OHSG, ERASG, RASG
Gravier Social, 523 Gravier Street, New Orleans, LA 70130
- Mixer 4 - EBASG, ENMSG, RPLSG, RDSG
Acme Oyster Company, 724 Iberville Street, New Orleans, LA 70130

Key to Specialty Group Designations

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

Speaker Ready Room Hours

Rhythm Office, 4th Floor

Sunday, December 2	3:00 PM – 7:00 PM
Monday, December 3	7:00 AM – 5:00 PM
Tuesday, December 4	7:00 AM – 5:00 PM
Wednesday, December 5	7:00 AM – Noon

Registration Desk Hours

Galerie Booth, 2nd Floor

Sunday, December 2	4:00 PM – 6:30 PM
Monday, December 3	7:00 AM – 5:00 PM
Tuesday, December 4	8:00 AM – 5:00 PM
Wednesday, December 5	8:00 AM – 5:00 PM

New to
Cambridge
in 2017

EJRR

EUROPEAN JOURNAL OF RISK REGULATION

At the Intersection of Global Law, Science and Policy

Editor:

Alberto Alemanno, HEC Paris, France

European Journal of Risk Regulation is an interdisciplinary forum bringing together legal practitioners, academics, risk analysts and policymakers in a dialogue on how risks to individuals' health, safety and the environment are regulated across policy domains globally. The journal's wide scope encourages exploration of public health, safety and environmental aspects of pharmaceuticals, food and other consumer products alongside a wider interpretation of risk, which includes financial regulation, technology-related risks, natural disasters and terrorism.

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Exhibition – Galerie Foyer, 2nd Floor

Monday, December 3 10:00 AM - 3:30 PM
Poster Reception 6:00 PM - 8:00 PM
Preservation Hall, 2nd Floor
Tuesday, December 4 9:30 AM - 4:00 PM
Wednesday, December 5 9:30 AM - 4:00 PM

Crude Life Portable Museum

Artist and biologist, Dr. Brandon Ballengée, will be onsite to share his Crude Life project. Stop by the Crude Life exhibit to interact with and learn more about this interdisciplinary art, science and outreach project, which is focused on raising public awareness of Gulf of Mexico species, ecosystems, and regional environmental challenges through community “citizen science” surveys and a portable Gulf art-science museum.



Exhibitors

International Society of Exposure Science (ISES)

1035 Sterling Road, Suite 202
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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.

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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.

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U.S. Environmental Protection Agency conducts research that provides the underpinning of science and technology for policies and decisions made at federal, state, and local levels. EPA's research office has locations in 14 facilities which identify pressing science needs.

Continuing Education Workshops

Workshop #	Workshop Title	Day/Time	Cost
WK1AMS	An Overview of Cyber Risk Topics	Sunday, December 2nd 8:00am – 12:00pm	\$100
WK2AMS	Introduction to APEX: Estimating Population-based Air Pollutant Exposure, Dose, and Health Risk	Sunday, December 2nd 8:00am – 12:00pm	\$200
WK3AMS	Quantitative Dose-Response Modeling Methods and Tools – Part I (Basic): Bayesian BMD Analysis	Sunday, December 2nd 8:00am – 12:00pm	\$200
WK4PMS	Cyber Risk Analysis – Working in the Trenches	Sunday, December 2nd 1:00pm – 5:00pm	\$100
WK5PMS	Eliciting Judgments from Experts and Non-experts to Inform Decision-making	Sunday, December 2nd 1:00pm – 5:00pm	\$250
WK6PMS	Regulatory Impact Analysis for Risk-Reduction Policies	Sunday, December 2nd 1:00pm – 5:00pm	\$275
WK7PMS	Quantitative Dose-Response Modeling Methods and Tools – Part II (Advanced): BMDS 3.0 and CatReg	Sunday, December 2nd 1:00pm – 5:00pm	\$200
WK9PMS	Monte Carlo Simulation and Probability Bounds Analysis in R with Hardly Any Data	Thursday, December 6th 8:30am – 5:30pm	\$290
WK11ALLS	Quantitative Dose-Response Modeling Methods and Tools – Part I and II (discounted)	Sunday, December 2nd 8:00am – 5:00pm	\$300
WK13AMTH	Health Risk Assessment of Environmental Chemical Mixtures: Concepts, Methods, Applications	Thursday, December 6th 8:00am-12:00pm	\$250
WK14ALLTH	Integrating Strategic Risk Communication and Stakeholder Engagement	Thursday, December 6th 8:30am-5:30pm	\$450
WK17ALLTH	Monte Carlo Simulation and Probability Bounds Analysis in R with Hardly Any Data	Thursday, December 6th 8:30am-5:30pm	\$290

Workshops are offered Sunday and Thursday, either Full Day, AM Half Day, or PM Half Day. Full descriptions of each workshop are provided below.

AM WORKSHOPS SUNDAY December 2nd, 8:00AM—12:00PM

WK1AMS: An Overview of Cyber Risk Topics

Cost: \$100

Location: Studio 2, 2nd Floor

Instructor: Aaron Fister, University of Oklahoma

This half-day workshop provides an overview of Cyber Risk topics. How has cyber risk evolved? What influences the complexity of cyber risk? How is cyber risk similar to other risk domains? What is the current (threat) landscape of cyber risk? The workshop then turns to understanding how organizations manage cyber risk. Examples of well-known Cyber Risk events are presented. The intent is to link direct and indirect causal factors that affect cyber risk. Then the discussion changes to understanding what attributes influence individual perceptions of cyber risk. Final results of a recent study are reviewed. The workshop will conclude with a discussion of potential research and collaboration opportunities. The workshop's audience is anyone interested in learning the current state of cyber risk topics. Researchers, students, and cyber risk professionals are encouraged to attend. You do not need to have a background in cyber risk to attend this workshop.

WK2AMS: Introduction to APEX: Estimating Population-based Air Pollutant Exposure, Dose, and Health Risk

Cost: \$200

Location: Studio 4, 2nd Floor

Instructor: Stephen Graham, U.S. EPA

This workshop will provide an introduction to EPA's Air Pollutants Exposure Model (APEX) version 5, a new publically available computer program that estimates population-based human inhalation exposures, intake doses, and adverse health responses associated with exposure to air pollutants. The model employs a flexible construct that allows users to estimate short- or long-term exposures to one or more pollutants, for study groups of any age,

sex, race, ethnicity, country, or disease status. APEX uses several databases to estimate exposures and potential health risks including those containing data on time-location-activity patterns, population demographics and commuting patterns, ambient concentrations, meteorological parameters, and anthropometric and physiologic attributes. Participants will be instructed in the basic principles of human inhalation exposure assessment considering a probabilistic exposure-modeling approach, how to use the core features of the program, how to define the study area and develop key model inputs, and how to generate basic exposure and risk output tables.

Students need to provide their own laptops running Microsoft Windows 7, Windows 8, or Windows 10 (currently the program does not run on Apple products), on which they have installed APEX and loaded all training files. Participants also need to have administrative access to their laptop. The APEX installation package, including the model executable, data input files, and technical documentation, is available at: www.epa.gov/sites/production/files/2017-10/apex5_installer_0.exe.

This workshop is targeted at beginner to novice modelers interested in probabilistic, population-based health risk assessments that emphasize the importance of representing variability in air pollutant concentrations, personal attributes, and other influential factors that can greatly affect exposure and risk estimates.

WK3AMS: Quantitative Dose-Response Modeling Methods and Tools – Part I (Basic): Bayesian BMD Analysis

Cost: \$200

Location: Studio 7, 2nd Floor

Instructor: Kan Shao, Indiana University

This half-day workshop (the first one in a series of two) will provide participants with fundamental knowledge of benchmark dose (BMD) analysis and hands-on experience in support of chemical risk assessment. The workshop will introduce benchmark dose modeling and analysis, probabilistic dose-response assessment in a Bayesian framework (including distributional BMD estimation) with hands-on experience on the recently developed web-based Bayesian BMD (BBMD) estimation system and its application to chemical risk assessment. The Bayesian BMD modeling and analysis involves using Markov Chain Monte Carlo (MCMC) algorithm to fit mathematical dose-response models to toxicity data (mainly dichotomous and continuous data) and estimating the distributions of model parameters and quantities of interest (e.g., BMD) by using posterior samples. This important feature makes the Bayesian BMD method particularly useful for probabilistic dose-response assessment, which has been strongly advocated by the WHO/IPCS expert panel. Another extremely useful feature of this workshop is the introduction on the model averaging techniques for BMD estimation, which has been suggested as a preferred approach to address model uncertainty in dose-response

assessment by the European Food Safety Authority (2017). Additionally, how the distributional estimates of BMD can support the WHO/IPCS probabilistic dose-response assessment framework will be briefly discussed. This workshop will also provide participants with necessary knowledge for the second part of the workshop. Participants should bring their own laptop with recent internet browser installed (the latest version of Google Chrome is preferred).

This workshop is targeted at professionals from industry and government who conduct quantitative dose-response analysis for chemical risk assessment, and students who are interested in Bayesian doseresponse modeling.

PM WORKSHOPS SUNDAY December 2nd, 1:00PM—5:00PM

WK4PMS: Cyber Risk Analysis – Working in the Trenches

Cost: \$100

Location: Studio 2, 2nd Floor

Instructor: Aaron Fister, University of Oklahoma

This half-day workshop provides an overview of probabilistic cyber risk analysis techniques. Probabilistic risk analysis is a relatively new and underutilized tool for most organizations managing cyber risk. Currently, many organizations rely on qualitative or ad hoc processes to identify and prioritize cyber risks. The workshop introduces probabilistic cyber risk analysis based on expert estimation and subjective probability. Examples will be provided utilizing the R software package. This workshop is directed at those unfamiliar with probabilistic risk analysis (or other quantitative methods). It will provide a venue for researchers and risk professionals to connect. Research and collaboration is needed to further develop theory, applications, education, and awareness of risk analysis and management methods for the Cyber Risk community.

This workshop is targeted at risk professionals, researchers, and students interested in the cyber risk analysis process.

WK5PMS: Eliciting Judgments from Experts and Non-experts to Inform Decision-making

Cost: \$250

Location: Studio 4, 2nd Floor

Instructors: Cristina McLaughlin, U.S. FDA; Aylin Sertkaya, Eastern Research Group, Inc. (ERG)

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, 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 a popular topic.

This workshop is targeted at Policy Analysts, Decision makers, Risk Assessors, Economists, and Decision Analysts.

WK6PMS: Regulatory Impact Analysis for Risk-Reduction Policies

Cost: \$275

Location: Studio 6, 2nd Floor

Instructor: Deborah Aiken, U.S. Department of Transportation

A major avenue for risk analysis to feed into the decision-making process is through the benefit-cost analysis in Regulatory Impact Analysis (RIA). Understanding RIAs will aid risk assessors in ensuring that their work effectively supports regulatory initiatives. This workshop will provide an overview of the practice of conducting Regulatory Impact Analysis (RIA) in the United States. The half-day course will cover the essential aspects of the (RIA) process, including the roles of various Executive Orders and OMB oversight, as well as its foundations in economic principles. The focus is on the U.S. approach to RIA, with its emphasis on integration with risk analysis, information quality, public engagement, and transparency. While some background in economics will facilitate understanding of the topics covered, formal training in economics is not necessary. The materials are intended to be accessible to participants from a wide range of backgrounds, and the workshop should be of interest to general SRA membership, particularly those working in a public policy setting and those seeking to learn more about how federal agencies evaluate risk reduction policies.

The workshop should be of interest to general SRA membership, particularly those working in a public policy setting and those seeking to learn more about how federal agencies evaluate risk reduction policies.

WK7PMS: Quantitative Dose-Response Modeling Methods and Tools – Part II (Advanced): BMDS 3.0 and CatReg

Cost: \$200

Location: Studio 7, 2nd Floor

Instructor: J. Allen Davis, U.S. EPA

This half-day workshop (the second in a series of two) will build upon the first to provide participants with interactive training on the use of the U.S. Environmental Protection Agency's (EPA) Benchmark Dose software (BMDS, version 3.0, released fall 2018) and Categorical Regression software (CatReg, version 3.1, released summer 2017) and their application to risk assessment. BMDS 3.0 builds upon previous versions of BMDS and the BMDS Wizard by simplifying the workflow for modeling, fully implementing all BMDS analyses in Microsoft Excel. New to BMDS 3.0 are Bayesian model averaging and the ability to assume response lognormality as alternative modeling approaches for analyzing dichotomous and continuous response data, respectively. The focus of the BMDS training will center on how to use the new interface and the theory and application of the new models, particularly the new model averaging methods. CatReg is a powerful modeling tool for the analysis of concentration-time response data and can be used for the meta-analysis of toxicological data. 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. 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.

Additionally, the meta-analytical capability of CatReg allows for the filtering and stratification of data to determine statistically significant different responses between sexes, strains, and/or species. CatReg training will focus on the theory of categorical regression and the application of the method to animal toxicity data.

Participants need to bring their own laptops, with BMDS and CatReg installed, to the workshop. The latest version of the software programs can be found at: www.epa.gov/bmbs

The target audience for this workshop is risk assessors and others that are interested in learning 1) how to apply EPA's Categorical Regression software in dose-response of toxicity data and 2) the new features of BMDS 3.0, including Bayesian model averaging.

ALL-DAY WORKSHOPS SUNDAY December 2nd, 8:30AM—5:30PM

WK9ALLS: Monte Carlo Simulation and Probability Bounds Analysis in R with Hardly Any Data

Cost: \$290

Location: Studio 9, 2nd Floor

Instructors: Scott Ferson, Institute for Risk and Uncertainty, University of Liverpool, UK

This 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 electronic files with software for the examples.

The target audience for this workshop is novices to Monte Carlo simulation, and anyone interested in probability bounds analysis.

ALL-DAY WORKSHOPS SUNDAY December 2nd, 8:00AM—5:00PM

WK11ALLS: Quantitative Dose-Response Modeling Methods and Tools – Part I and II

Cost: \$300 (discounted)

Location: Studio 7, 2nd Floor

Instructor: Kan Shao, Indiana University; J. Allen Davis, U.S. EPA

This full-day workshop will provide participants with fundamental knowledge of benchmark dose (BMD) analysis and hands-on experience in support of chemical risk assessment. The workshop will introduce benchmark dose modeling and analysis, probabilistic dose-response assessment in a Bayesian framework (including distributional BMD estimation) with hands-on experience on the recently developed web-based Bayesian BMD (BBMD) estimation system and its application to chemical risk assessment. The Bayesian BMD modeling and analysis involves using Markov Chain Monte Carlo (MCMC) algorithm to fit mathematical dose-response models to toxicity data (mainly dichotomous and continuous data) and estimating the distributions of model parameters and quantities of interest (e.g., BMD) by using posterior samples. This important feature makes the Bayesian BMD method particularly useful for probabilistic dose-response assessment, which has been strongly advocated by the WHO/IPCS expert panel. Another extremely useful feature of this workshop is the introduction on the model averaging techniques for BMD estimation, which has been suggested as a preferred approach to address model uncertainty in dose-response assessment by the European Food Safety Authority (2017). Additionally, how the distributional estimates of BMD can support the WHO/IPCS probabilistic doseresponse assessment framework will be briefly discussed. This workshop will also provide participants with necessary knowledge for the second part of the workshop.

The second part of the workshop will build upon the first to provide participants with interactive training on the use of the U.S. Environmental Protection Agency's (EPA) Benchmark Dose software (BMDS, version 3.0, released fall 2018) and Categorical Regression software (CatReg, version 3.1, released summer 2017) and their application to risk assessment. BMDS 3.0 builds upon previous versions of BMDS and the BMDS Wizard by simplifying the workflow for modeling, fully implementing all BMDS analyses in Microsoft Excel. New to BMDS 3.0 are Bayesian model averaging and the ability to assume response lognormality as alternative modeling approaches for analyzing dichotomous and continuous response data, respectively. The focus of the BMDS training will center on how to use the new interface and the theory and application of the new models, particularly the new model averaging methods. CatReg is a powerful modeling tool for the analysis of concentration-time-response data

and can be used for the meta-analysis of toxicological data. 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. 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. Additionally, the metaanalytical capability of CatReg allows for the filtering and stratification of data to determine statistically significant different responses between sexes, strains, and/or species. CatReg training will focus on the theory of categorical regression and the application of the method to animal toxicity data.

Participants should bring their own laptop with recent internet browser installed (the latest version of Google Chrome is preferred). Laptops also need BMDS and CatReg installed for this workshop. The latest version of the software programs can be found at: <https://www.epa.gov/bmds>

The target audience for this workshop is risk assessors and others that are interested in learning 1) how to apply EPA's Categorical Regression software in dose-response of toxicity data and 2) the new features of BMDS 3.0, including Bayesian model averaging.

AM WORKSHOPS

THURSDAY December 6th, 8:00AM—12:00PM

WK13AMTH: Health Risk Assessment of Environmental Chemical Mixtures: Concepts, Methods, Applications

Cost: \$250

Location: Bacchus, 4th Floor

Instructor: Linda K Teuschler, LK Teuschler & Associates

This problems-based, half-day, introductory workshop focuses on methods to assess health risks posed by exposures to chemical mixtures in the environment. Chemical mixtures health risk assessment methods continue to be developed and evolve to address concerns over health risks from multichemical exposures. This workshop presents key concepts and terminology used in chemical mixtures risk assessment and discusses both whole mixture and component-based methods. Response addition and dose addition will be described and will include the following methods: the hazard index, interaction-based hazard index, relative potency factors, toxicity equivalence factors and integrated additivity. The risk assessment examples developed in the workshop are adapted from real-world mixture analyses, e.g., waste site contaminants, pesticide applications, and drinking water

disinfection by-product exposures. The “hands-on” exercise, demonstrating the methods is 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 necessarily reflect the views or policies of the U.S. EPA.

This workshop targets students and other individuals who are interested in developing knowledge of risk assessment methods for environmental chemical mixtures, including component methods that rely on dose addition and response addition. Teaching methods include lectures and hands-on exercises.

ALL-DAY WORKSHOPS

THURSDAY December 6th, 8:30AM—5:30PM

WK14ALLTH: Integrating Strategic Risk Communication and Stakeholder Engagement with Risk Management to Enhance Organizational Change and Resilience

Cost: \$450

Location: Regent, 4th Floor

Instructors: Steve Ackerlund, Ecology & Environment, Inc.; Sarah Thorne, Decision • Partners

The workshop will include brief introductory lectures but will focus more on application of the approach through presentation of case studies, exercises, and interactive discussions of practical experiences of the lecturers and of workshop participants. Lectures will present a brief introduction to Risk Communication and Stakeholder Engagement principles and practices. Case studies will demonstrate real-world applications of the lecturers. Small group exercises will allow application of learned practices to provide deeper appreciation of key fundamentals, such as issue framing and design of Risk Communication and Stakeholder Engagement Plans. Interactive discussions will allow lecturers and participants to discuss solutions to Participants' current real-world problems. Workbooks will provide course content, step-by-step worksheets to help students adapt the Strategic Risk

Communications process to their own risk communication challenge and will include a bibliography of additional resources. Some case studies and discussion may be supported via videoconference with remote presenters.

This workshop is designed for anyone responsible for management, analysis or communication of risk, or planning and coordination of resilience and risk response, within an organization with internal and/or external stakeholders, including the general public. The workshop is appropriate for policy makers, regulators, industry or NGO managers, communicators, scientists, engineers, and planners. At the conclusion of the course, participants will be able to incorporate state-of-the-science concepts and practices of Strategic Risk Communications and stakeholder engagement into an integrated risk management and resilience approach that is appropriate to the nature of the risks to be addressed.

WK17ALLTH: Monte Carlo Simulation and Probability Bounds Analysis in R with Hardly Any Data

Cost: \$290

Location: Balcony M, 4th Floor

Instructor: Scott Ferson, Institute for Risk and Uncertainty, University of Liverpool, UK

This 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 electronic files with software for the examples.

The target audience for this workshop is novices to Monte Carlo simulation, and anyone interested in probability bounds analysis.

Mark your calendar!

Dates for the 2019 - 2021
Annual Meetings:

2019

December 8-12

*Crystal Gateway Marriott
Arlington, Virginia*

2020

December 13-17

*JW Marriott Austin
Austin, Texas*

2021

December 5-9

*Wardman Park Marriott
Washington, DC*

Resumes and Job Opportunities

The Annual Meeting offers an opportunity to connect jobs with job seekers. Please send your available job postings via email to Jennifer Rosenberg at jrosenberg@BurkInc.com. Job postings and blind resumes are posted at the meeting and will be held at SRA headquarters for six months after the meeting.

Plenary Sessions

All plenary sessions are held in the New Orleans Marriott, Acadia, 3rd Floor

Monday, December 3, Morning Plenary

Conducting Risk Research with Underrepresented Populations: Dispatches from the Field?

Minority and low-income populations are disproportionately vulnerable to a variety of environmental and health risks, and risk scholars have called for more research involving individuals with diverse backgrounds and experiences. Plenary speakers will share experiences conducting risk research with underrepresented populations, focusing on challenges as well as opportunities for contemporary risk scholarship. Speakers will draw on recent examples from their own research, including academic-NGO collaborations, to highlight key insights for risk scholars amid shifting demographics and rising socioeconomic inequalities in the U.S. and abroad.

Organizer:

Jonathon Schuldt, *Cornell University*

Panel:

Grace Lewis, *Environmental Defense Fund*

Neil Lewis, Jr., *Cornell University*

Jeff Niederdeppe, *Cornell University*

Adam Pearson, *Pomona College & Claremont Graduate University*

Susana Ramirez, *University of California Merced*

Rainer Romero-Canyas, *Environmental Defense Fund*

Robin Dillon-Merrill, *NSF Program Director*

Tuesday, December 4, Morning Plenary

Risk Perceptions and Resilience among Coastal Gulf Coast Communities?

Presented by members of the Consortium for Resilient Gulf Communities. The Consortium for Resilient Gulf Communities (CRGC) was established in 2015 through a three-year grant from the Gulf of Mexico Research Initiative to assess and address the social, economic, and public health impacts of the 2010 Deepwater Horizon oil spill in the Gulf of Mexico region. CRGC's research, outreach, and education goals are aimed at helping communities across the Gulf Coast to more effectively understand, withstand, and overcome the multiple stressors brought on by such disasters.

Panel:

Melissa Finucane, *Consortium Director*

Rajeev Ramchand, *co-lead of the CRGC Health Team*

Andrew Parker, *co-lead of the CRGC Self-Evaluation Team*

Vanessa Parks, *doctoral student at Louisiana State University*

Lunch Wednesday

Crude Life: A Citizen Art and Science Investigation of Gulf of Mexico Biodiversity after the Deepwater Horizon Oil Spill

Join artist and biologist, Dr. Brandon Ballengée for a discussion on the Crude Life project. Crude Life is an interdisciplinary art, science and outreach project focused on raising public awareness of Gulf of Mexico species, ecosystems, and regional environmental challenges through community "citizen science" surveys and a portable Gulf art-science museum. For this project, antique sea chests were retrofitted into a movable natural history museum or Gulf wunderkammer (Cabinet of Wonders)! Each chest contains natural history artifacts, (preserved specimens, fossils, dried alga, etc.), art (natural history drawings or videos) and tells a different part of the story within our complex Gulf ecosystems. The scientific research of Crude Life has focused on looking for 14 missing species of endemic Gulf fishes that have not been found following the 2010 oil spill.

Brandon Ballengée, Ph.D., *Ballengée Studio LLC and LSU Museum of Natural Science*

7:00 AM-8:00 AM **New Member, Students/Young Professionals Breakfast** - *Bissonet, 3rd Floor*

8:30 AM-10:00 AM **Plenary Session**, Conducting Risk Research with Underrepresented Populations: Dispatches from the Field - *Acadia, 3rd Floor*
Participants: Grace Lewis, Neil Lewis, Jr., Jeff Niederdeppe, Adam Pearson, Susana Ramirez, Rainer Romero-Canyas, Robin Dillon-Merrill

10:00 AM-10:30 AM **Coffee Break** *sponsored by Evidence Partners*

	Galerie 1, 2nd Floor	Galerie 2, 2nd Floor	Galerie 3, 2nd Floor	Galerie 4, 2nd Floor	Galerie 5, 2nd Floor
10:30 AM-Noon	M2-A Symposium: When Risks Collide - Making Sense of Hybrid Risks in Today's Information Rich Society	M2-B Symposium: Foundational Issues in Risk Analysis I	M2-C Symposium: Vaccine Communication I	M2-D Energy Systems	M2-E Symposium: Alternative Testing Strategies to Advance the Risk Analysis of Nanomaterials
Noon-1:30 PM	Pick up your box lunch near the registration desk and attend the specialty group meeting(s) of your choice. 12:10 PM-12:45 PM - Dose Response (DRSG), Economics & Benefits Analysis (EBASG), Occupational Health & Safety (OHSSG), Risk Communication (RCSG), Security & Defense (SDSG), Ecological Risk Assessment (ERASG), Foundational Issues in Risk Analysis (FRASG), Risk, Policy & Law (RPLSG) 12:50 PM-1:25 PM - Exposure Assessment (EASG), Risk & Development (RDSG), Applied Risk Management (ARMSG), Decision Analysis & Risk (DARSG), Emerging Nanoscale Materials (ENMSG), Engineering & Infrastructure (EISG), Microbial Risk Analysis (MRASG), Resilience Analysis Specialty Group Meeting (RASG)				
1:30 PM-3:00 PM	M3-A Symposium: Benzene: Low Doses Issues	M3-B Roundtable: Prudent Risk Analysis	M3-C Symposium: Vaccine Communication II	M3-D Sustainability and Infrastructure	M3-E Symposium: Risk Perception, Risk Controversies and Risk Management: Can Public Engagement with Values Strengthen Risk Management Practices?
3:00 PM-3:30 PM	Coffee Break				
3:30 PM - 5:00 PM	M4-A Symposium: Dose-Responses for Environmental Carcinogens: The Emerging Role of Threshold, Biphasic and other Risk Models	M4-B Roundtable: Success Stories of Women in Risk Analysis	M4-C Roundtable: Periodic Review	M4-D Riding out the Storm	M4-E Roundtable: The Battle of the Guidelines: Four Competing Ideas for Domain-Specific Risk Management Guidelines

6:00 PM-8:00 PM **Poster Reception**, *Preservation Hall, 2nd Floor*

7:00 AM-8:00 AM **New Member, Students/Young Professionals Breakfast** - *Bissonet, 3rd Floor*

8:30 AM-10:00 AM **Plenary Session**, Conducting Risk Research with Underrepresented Populations: Dispatches from the Field - *Acadia, 3rd Floor*
Participants: Grace Lewis, Neil Lewis, Jr., Jeff Niederdeppe, Adam Pearson, Susana Ramirez, Rainer Romero-Canyas, Robin Dillon-Merrill

10:00 AM-10:30 AM **Coffee Break** *sponsored by Evidence Partners*

	Galerie 6, 2nd Floor	Mardi Gras Ballroom ABC, 3rd Floor	Mardi Gras Ballroom D, 3rd Floor	Mardi Gras Ballroom E, 3rd Floor	Mardi Gras Ballroom FGH, 3rd Floor
10:30 AM-Noon	M2-F Symposium: Climate Change Adaptation Planning for Coastal Areas: Risk Assessment, Mitigation, and Evaluation, Part I	M2-G Inhalation Exposure and Risk	M2-H Poster Platform: Frontiers in QMRA: Analytical Frameworks for Emerging Microbial Concerns	M2-I Poster Platform: Risk Perceptions, National Hazards & Extreme Weather	M2-J Symposium: Heuristics, Biases and Other Seemingly Irrational Factors in People's Decisions Regarding Innovative Technologies, Foods and Other Consumer Goods

Noon-1:30 PM
 Pick up your box lunch near the registration desk and attend the specialty group meeting(s) of your choice.
 12:10 PM-12:45 PM - Dose Response (DRSG), Economics & Benefits Analysis (EBASG), Occupational Health & Safety (OHSSG), Risk Communication (RCSG), Security & Defense (SDSG), Ecological Risk Assessment (ERASG), Foundational Issues in Risk Analysis (FRASG), Risk, Policy & Law (RPLSG)
 12:50 PM-1:25 PM - Exposure Assessment (EASG), Risk & Development (RDSG), Applied Risk Management (ARMSG), Decision Analysis & Risk (DARSG), Emerging Nanoscale Materials (ENMSG), Engineering & Infrastructure (EISG), Microbial Risk Analysis (MRASG), Resilience Analysis Specialty Group Meeting (RASG)

1:30 PM-3:00 PM	M3-F Symposium: Climate Change Adaptation Planning for Coastal Areas: Risk Assessment, Mitigation, and Evaluation, Part II	M3-G Does Exposure Equal Dose?	M3-H Communicating Novel Emergent Risk	M3-I Poster Platform: Managing & Measuring Cyber Security Risk	M3-J Symposium: Climate Change Risk Perceptions and Communications
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3:00 PM-3:30 PM **Coffee Break**

3:30 PM - 5:00 PM	M4-F Symposium: Greener Choices: Improving the Safety of Consumer Products through Chemical Alternatives Analysis	M4-G Playing with Nature: The Challenges of Synthetic Biology	M4-H Novel Approaches & Their Applications in Microbial Risk Assessment	M4-I Symposium: Game Theory, Decision Analysis for Homeland Security and Disaster Management	M4-J Navigating Fear & Crisis: Implications for Health & Safety Communication
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6:00 PM-8:00 PM **Poster Reception**, *Preservation Hall, 2nd Floor*

8:30 AM-10:00 AM **Plenary Session**, Risk Perceptions and Resilience among Coastal Gulf Coast Communities - *Acadia, 3rd Floor*
Participants: Melissa Finucane, Rajeev Ramchand, Andrew Parker, Vanessa Parks

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

	Galerie 1, 2nd Floor	Galerie 2, 2nd Floor	Galerie 3, 2nd Floor	Galerie 4, 2nd Floor	Galerie 5, 2nd Floor
10:30 AM-Noon	T2-A Roundtable: RO Events on Communicating Evidence for Benefits and Risks of Raw Milks	T2-B Symposium: Foundational Issues in Risk Analysis II – Time Dynamics and Multigenerational Issues	T2-C Symposium: Risk and Precision Medicine	T2-D Roundtable: Diversity in the Risk Analysis Profession	T2-E Infrastructure Risk Management

Noon-1:30 PM **SRA Awards Luncheon and Business Meeting** - *Acadia, 3rd Floor*
 Includes all SRA Awards, and the 5 Best Poster Award Winners from Monday’s Poster Reception. *(Included in Registration Fee)*

1:30 PM-3:00 PM	T3-A Roundtable: Today’s Boost for Resilience – Does it Conflict with the Risk Field?	T3-B Symposium: Foundational Issues in Risk Analysis III – From Data to Systemic Hazards	T3-C Societal Issues and Risk	T3-D Symposium: Modeling of Infrastructure and Community Resilience	T3-E Symposium: ENAVI: The German Energy Transition Navigated
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3:00 PM-3:30 PM **Coffee Break**

3:30 PM-5:00 PM	T4-A Symposium: Development of Metrics to Assess Critical Infrastructure Resilience	T4-B Roundtable: Risk Analysis vs Safety Management: Two Ships Passing in the Night? - How Closely Integrated Could and Should these two Approaches be for Improving the Joint Management of Safety and Risk?	T4-C Symposium: Decision-Making Algorithms: Governing Risks and Opportunities	T4-D Symposium: Predictive Risk Modeling for Resilient Infrastructure Systems	T4-E Risk Governance and Risk Management in Complex Systems
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6:00 PM-7:30 PM **Specialty Group Mixers**

8:30 AM-10:00 AM **Plenary Session**, Risk Perceptions and Resilience among Coastal Gulf Coast Communities - *Acadia, 3rd Floor*
Participants: Melissa Finucane, Rajeev Ramchand, Andrew Parker, Vanessa Parks

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

	Galerie 6, 2nd Floor	Mardi Gras Ballroom ABC, 3rd Floor	Mardi Gras Ballroom D, 3rd Floor	Mardi Gras Ballroom E, 3rd Floor	Mardi Gras Ballroom FGH, 3rd Floor
10:30 AM-Noon	T2-F Symposium: Geoengineering Risks, Decisions, and Governance, Part I		T2-H Roundtable: EPA Transparency in Science and Economics	T2-I Symposium: Risk Analysis Applications for Strategic Planning and Resource Management at the U.S. Department of Homeland Security	T2-J Globalization and the Kaleidoscope of Risk for Complex Socio-Economic Systems

Noon-1:30 PM **SRA Awards Luncheon and Business Meeting** - *Acadia, 3rd Floor*
 Includes all SRA Awards, and the 5 Best Poster Award Winners from Monday's Poster Reception. *(Included in Registration Fee)*

1:30 PM-3:00 PM	T3-F Symposium: Geoengineering Risks, Decisions, and Governance, Part II	T3-G Dietary and Drinking Water Exposures	T3-H Economics of Food Risk-Benefit Analysis	T3-I Modeling & Simulation for Security, Safety and Risk Monitoring	T3-J From AI to Fake News: Media & Emerging Risks
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3:00 PM-3:30 PM **Coffee Break**

3:30 PM-5:00 PM	T4-F Symposium: Department of Defense Efforts to Advance the Risk Assessment of Nanomaterials	T4-G Symposium: The Many Faces of Emerging and Legacy Contaminants: Collecting, Interpreting, and Acting on Water Data	T4-H Application of QMRA: From Evaluating Potential Interventions to Risk-Benefit Analysis	T4-I Symposium: Risk Transfer and Global Workplace Health	T4-J Trust and Public Participation
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6:00 PM-7:30 PM **Specialty Group Mixers**

Wednesday

	Galerie 1, 2nd Floor	Galerie 2, 2nd Floor	Galerie 3, 2nd Floor	Galerie 4, 2nd Floor	Galerie 5, 2nd Floor
8:30 AM-10:00 AM	W1-A Symposium: Risk, Resilience, and Decision Making: Integrating Resilience into Risk Analysis and Adaptation Planning, Part I	W1-B Symposium: Foundational Issues in Risk Analysis IV	W1-C Exposure and Disaster Decision-Making	W1-D Symposium: Operationalization of Critical Infrastructure interdependencies assessments	W1-E Roundtable: Risk Analysis and Management in Finance
10:00 AM-10:30 AM Coffee Break					
10:30 AM-Noon	W2-A Symposium: Risk, Resilience, and Decision Making: Integrating Resilience into Risk Analysis and Adaptation Planning, Part II	W2-B Roundtable: Educating Kids to Risk: What Can be Done, What Has been Done and What Remains to be Done	W2-C Health Safety, Risks and Toxicity	W2-D Symposium: Advances in Risk Management and Resilience Practices for Infrastructure and Environmental Systems	W2-E Roundtable: Addressing Emerging Risks in Consumer Products
Noon-1:30 PM Plenary Luncheon, Crude Life: A Citizen Art and Science Investigation of Gulf of Mexico Biodiversity after the Deepwater Horizon Oil Spill - Acadia, 3rd Floor (Included in Registration Fee) Speaker: Brandon Ballengée					
1:30 PM-3:00 PM	W3-A Resilience and Critical Infrastructure	W3-B Symposium: Foundational Issues in Risk Analysis V	W3-C Roundtable: Food Innovations: Communication and Regulation for Commercial Viability	W3-D Symposium: Advancements in Quantitative Applications for Data Integration in the Characterization of Hazard, Dose-Response, and Uncertainty	W3-E Advanced Methodology to Support Risk Management
3:00 PM-3:30 PM Coffee Break					
3:30 PM -5:00 PM	W4-A Risk Perceptions and Decision Making: Approaches to Understanding Judgments and Supporting Decisions from Agriculture to Climate Change	W4-B Symposium: Modernization of Study Quality Evaluation – A Survey and Discussion of the Evaluation and Integration of Study Validity as Part of Systematic Review	W4-C Symposium: Evaluating Public Health Impacts of Electronic Nicotine Delivery Systems	W4-D Symposium: Cancer Risk Assessment	W4-E Risk Management in Emergency Management, Risk Communication and Environmental Justice
5:00 PM - 5:30 PM T-Shirt Giveaway and Raffle. Possibility of winning registration to the 2019 Annual Meeting - Registration Area, Galerie Booth, 2nd Floor					

Wednesday

	Galerie 6, 2nd Floor	Mardi Gras Ballroom ABC, 3rd Floor	Mardi Gras Ballroom D, 3rd Floor	Mardi Gras Ballroom E, 3rd Floor	Mardi Gras Ballroom FGH, 3rd Floor
8:30 AM-10:00 AM	W1-F Symposium: Risk Analysis for Uncertain Futures	W1-G Ecosystem Services and Management	W1-H Presence and Survival of Microbial Pathogens in Environment and Supply Chain	W1-I Symposium: The Security and Resilience Nexus	W1-J Roundtable: Risky Conversations: Examining the Dual Impacts of the SRA Annual Meeting on Thinking and Practice in Risk Science
10:00 AM-10:30 AM Coffee Break					
10:30 AM-Noon	W2-F Symposium: Benefit-Risk Assessment for Regulatory Review of Human Drugs and Biologics	W2-G Mining & Waste Disposal	W2-H Improving Risk-Benefit Estimates for Regulatory Analysis	W2-I Risk Modeling for Prevention	W2-J From Flint to Fracking: Media & Environmental Risk
Noon-1:30 PM Plenary Luncheon, Crude Life: A Citizen Art and Science Investigation of Gulf of Mexico Biodiversity after the Deepwater Horizon Oil Spill - Acadia, 3rd Floor (Included in Registration Fee) Speaker: Brandon Ballengée					
1:30 PM-3:00 PM	W3-F Decision Analysis Applications and Case Studies	W3-G Symposium: Potential Exposure and Health Effects Related to the Development of Oil and Natural Gas from Unconventional Resources in the United States	W3-H Economics of Environmental Policy	W3-I Symposium: What Risk Assessors Should Know This Year about Occupational Risk Analysis: From Chemical Exposure to Traumatic Brain Injury to Cumulative Risk Assessment	W3-J Symposium: Low-Carbon Energy Transitions: Linking Stakeholder Exchanges & Risk Communication
3:00 PM-3:30 PM Coffee Break					
3:30 PM -5:00 PM	W4-F Roundtable: Navigating the Risk Landscape: Facilitating Critical Thought in an Information Rich World	W4-G Symposium: Understanding the Ecological and Health Risks Associated with Trace Organics in the Environment	W4-H Economics of Low Probability / High Impact Events	W4-I Communicating Health & Environmental Risks	W4-J Climate Change Communication: Implications for Messaging
5:00 PM - 5:30 PM T-Shirt Giveaway and Raffle. Possibility of winning registration to the 2019 Annual Meeting - Registration Area, Galerie Booth, 2nd Floor					

Technical Program

Presenter's name is asterisked (*) if other than first author.

10:30 AM – 12:00 PM	10:30 AM – 11:30 AM	10:30 AM – 12:00 PM	10:30 AM – 11:30 AM	10:30 AM – 11:30 AM
<p><i>Galerie 1, 2nd Floor</i></p> <p>M2-A Symposium: When Risks Collide - Making Sense of Hybrid Risks in Today's Information Rich Society</p> <p><i>Co-chairs: Ian Hall, Igor Linkov</i></p> <p>10:30 AM M2-A.1 Security and Resilience of Information Systems <i>Linkov I</i> <i>US Army Engineer Research and Development Center</i></p> <p>10:50 AM M2-A.2 Joining Up the Dots – Improving the Understanding and Communication of Risks to End-users <i>Hall IS</i> <i>University of Northampton</i></p> <p>11:10 AM M2-A.3 A Canadian Tool for Prioritization of Vector-Borne Diseases and the Contribution of Climate Change <i>Ng V, Otten A*, Chemeris A, Breadner P, Fazil A</i> <i>Public Health Agency of Canada</i></p> <p>11:30 AM M2-A.5 Considering Hybrid Threats in Critical Infrastructure Resilience Assessments <i>Verner D</i> <i>Argonne National Laboratory</i></p> <p>Sponsored by: <i>Resilience Analysis SG</i></p>	<p><i>Galerie 2, 2nd Floor</i></p> <p>M2-B Symposium: Foundational Issues in Risk Analysis I</p> <p><i>Chair: Terje Aven</i></p> <p>10:30 AM M2-B.1 Defining Risk Analysis: Audiences, Intentions, and Meta-level Concepts <i>Waller RR</i> <i>Protect Heritage Corp</i></p> <p>10:50 AM M2-B.2 An Alternative Understanding of Risk – Implications for Risk Attenuation and Risk Amplification <i>Fjaeran L, Aven T</i> <i>University of Stavanger</i></p> <p>11:10 AM M2-B.4 A Sufficient Similarity Framework for Use in Whole Mixtures Hazard Assessment: Botanical Dietary Supplement Case Studies <i>Rider CV</i> <i>NIEHS/NTP</i></p> <p>Sponsored by: <i>Foundational Issues in Risk Analysis SG</i></p>	<p><i>Galerie 3, 2nd Floor</i></p> <p>M2-C Symposium: Vaccine Communication I</p> <p><i>Co-chairs: Frederic Boudier, Barbara Rath</i></p> <p>10:30 AM M2-C.1 Building Trust in Polio Surveillance and Eradication Policy in Nigeria <i>Elemuwa CO, Bassey E, Elemuwa UG, Isibor JO, Omoregie R, Abdullahi H</i> <i>NPHCDA, WHO Office, National Agency for Food and Drugs Administration (NAFDAC), Ambrose Alli University, University of Benin Teaching Hospital</i></p> <p>10:50 AM M2-C.3 Conspiracy Theories and Online Scares – Implications on Human Rights <i>Maurer A</i> <i>Vienna Vaccine Safety Initiative</i></p> <p>11:10 AM M2-C.4 Infectious Disease Communication in Times of Crisis: Experiences During the HIV and Ebola Outbreaks in African Settings <i>Mworozzi EA, Rujumba J, Bakyaite T</i> <i>Mulago National Referral Hospital, Makerere University, Vienna Vaccine Safety Initiative, Ministry of Health</i></p> <p>11:30 AM M2-C.5 Making 11 Vaccines Mandatory – Recent Policy Changes in France <i>Vuitton DA, Leroy J, Moulin AM, Rath BA</i> <i>University Bourgogne Franche-Comté, University Hospital, CNRS-Paris University, Vienna Vaccine Safety Initiative</i></p> <p>Sponsored by: <i>Risk, Policy and Law SG</i></p>	<p><i>Galerie 4, 2nd Floor</i></p> <p>M2-D Energy Systems</p> <p><i>Chair: Stanley Levinson</i></p> <p>10:30 AM M2-D.2 Strategic Assessment of Future Energy Needs and Emerging Technologies (SAFE-NET) <i>Macal CM, Trail JB, Murphy JT, Boland N, Suter J, MacDonell MM, Wall TA</i> <i>Argonne National Laboratory</i></p> <p>10:50 AM M2-D.3 The Case for Curtailment: Evaluating the Risks of Renewable Penetration <i>Abdulla A, Schell KR</i> <i>UC San Diego, Polytechnique Montréal</i></p> <p>11:10 AM M2-D.4 Risk and Regulatory Considerations for SMR Emergency Planning Zones Based on Passive Decontamination Potential <i>Carless TS, Fischbeck PS, Talabi MS</i> <i>Carnegie Mellon University, Pittsburgh Technical</i></p> <p>Sponsored by: <i>Engineering and Infrastructure SG</i></p>	<p><i>Galerie 5, 2nd Floor</i></p> <p>M2-E Symposium: Alternative Testing Strategies to Advance the Risk Analysis of Nanomaterials</p> <p><i>Co-chairs: James Ede, Jo Anne Shatkin</i></p> <p>10:30 AM M2-E.1 Gene Expression in Risk Assessment of Nanomaterials: Evaluating Current Data and Methods <i>Davidson SE, Medvedovic M, Kuempel ED</i> <i>University of Cincinnati, National Institute for Occupational Safety and Health (NIOSH), Oak Ridge Associated Universities (ORAU) Fellow at NIOSH</i></p> <p>10:50 AM M2-E.3 Optimizing a Test Bed System to Assess Human Respiratory Safety after Exposure to Chemical and Particle Aerosolization <i>Sayes CM</i> <i>Baylor University</i></p> <p>11:10 AM M2-E.4 Evaluating Adverse Outcome Pathways as Tools for the Risk Assessment of Nanomaterials <i>Shatkin JA</i> <i>Vireo Advisors</i></p> <p>Sponsored by: <i>Emerging Nanoscale Materials SG</i></p>

10:30 AM – 12:00 PM

Galerie 6, 2nd Floor

M2-F Symposium: Climate Change Adaptation Planning for Coastal Areas: Risk Assessment, Mitigation, and Evaluation, Part I

Chair: Christian Beaudrie

10:30 AM M2-F.1

A Sea-Level Rise Adaptation Planning Framework for Vancouver, British Columbia

*Beaudrie CEH, Lyle T, Murdock H, Harstone M, Danyluk A
Compass Resource Management Ltd.*

10:50 AM M2-F.2

Risk Communication was Hard Enough when Climate was Stationary

*Lyle TS, Beaudrie CB
Ebbwater Consulting Inc.*

11:10 AM M2-F.4

Neglecting Behavioral Feedbacks in Quantitative Risk Assessment Can Lead to Maladaptation to Natural Hazards

*Logan TM, Bricker JD, Guikema SD
University of Michigan*

11:30 AM M2-F.5

Quantifying Regional Climate Change Resilience: Adaptive Management in Charleston, SC

*Cains MG, Henshel D, Landis W
Indiana University, Western Washington University*

Sponsored by:
Decision Analysis and Risk SG

10:30 AM – 12:00 PM

Mardi Gras Ballroom ABC, 3rd Floor

M2-G Inhalation Exposure and Risk

Chair: Amina Wilkins

10:30 AM M2-G.1

Potential Airborne Asbestos Exposure and Risk Associated with the Historical Use of Cosmetic Talcum Powder Products

Burns A, Barlow CA, Banducci A, Unice K, Sahmel J
Cardno ChemRisk, GZA,
GeoEnvironmental Inc.,
Insight Exposure and Risk Sciences Inc.*

10:50 AM M2-G.2

Evaluating Talc Exposures Among Miners and Millers in Vermont

*Rossner A, Williams PRD, Mellas-Hulett E, Rahman MA
Clarkson University*

11:10 AM M2-G.3

Potential Health Risks of Exposure to Toxic Metals in E-Cigarettes

*Liu C, Marano K, Murphy P, Culbert C
RAI Services Company*

11:30 AM M2-G.4

Comparing Apples to Oranges: Interpreting Ozone Concentrations from Observational Studies in the Context of the United States Ozone Regulatory Standard

*Lange SL
Texas Commission on Environmental Quality*

Sponsored by:
Exposure Assessment SG

10:30 AM – 12:00 PM

Mardi Gras Ballroom D, 3rd Floor

M2-H Poster Platform: Frontiers in QMRA: Analytical Frameworks for Emerging Microbial Concerns

Chair: Amir Mokhtari

10:30 AM M2-H.1
Uncertainty Analysis for Monitoring Opportunistic Pathogens in Premise Plumbing

*Aw TG, Mitchell J
Tulane University and Michigan State University*

10:30 AM M2-H.2
Building Water System Risk Trade-offs

*Bartrand TB, Masters SM, Gurian P, Hamilton K, Hargy T
ESPRI*

10:30 AM M2-H.3
A Reverse QMRA for Pseudomonas Aeruginosa in a Showering Event to Inform Monitoring Levels

*Dean KJ, Mitchell JM
Michigan State University*

10:30 AM M2-H.4
Approaches for Determining a Concentration of Concern for Non-tuberculous Mycobacteria in Building Water Systems

*Hamilton KA, Gurian PL
Arizona State University*

10:30 AM M2-H.5
The Pseudomonas Aeruginosa Conundrum in Premise Plumbing: Setting Acceptable Limits Using the DALY Approach

*Rasheduzzaman M, Tolofari DL, Yassaghi H, Raj L, Gurian PL, Bartrand T, Hamilton KA
Drexel University, The Environmental Science, Policy and Research Institute*

10:30 AM M2-H.7
Dynamic Modeling of Legionnaires' Disease Health Risk In Hospital Hot Water Systems

*Weir MH, Mraz AL
The Ohio State University*

10:30 AM M2-H.8
Using Reverse QMRA to Inform Standards for Naegleria

*Yang Z, Daley C, Lindsey J, Cheng H, Bartrand T, Hamilton K, Gurian PL
Drexel University*

Sponsored by:
Microbial Risk Analysis SG

10:30 AM – 12:00 PM

Mardi Gras Ballroom E, 3rd Floor
**M2-I Poster Platform: Risk Perceptions,
 National Hazards & Extreme Weather**

Chair: Gina Eosco

10:30 AM
 The Geographic Distribution of
 Extreme Weather and Climate Risk
 Perceptions in the United States
Ripberger J, Silva C, Jenkins-Smith H
University of Oklahoma

M2-I.2 **10:30 AM** **M2-I.8**
 Constructing Risk Communication
 Based on How Users Make Decisions:
 An Example from Avalanche Safety
 Warnings
Haegeli P, St Clair AE, Finn HGW, Gregory R*
Simon Fraser University

10:30 AM
 Earthquakes, Flooding, Landslides,
 and Typhoons: Multi-hazard Risk
 Perceptions and Management
 Priorities in Kyushu, Japan
Tanner A, Fujimi T, Chang S
*University of British Columbia,
 Kumamoto University*

M2-I.3 **10:30 AM** **M2-I.9**
 How Do Risk Perceptions, Efficacy,
 and Other Factors Influence Hurricane
 Evacuation Decisions?
Morss RE, Cuite CL, Demuth JL*
*National Center for Atmospheric
 Research, Rutgers University*

10:30 AM
 A Yardstick for Danger: Developing
 a Sensitive and Flexible Measure of
 Perceived Risk
Walpole HW, Wilson RS
The Ohio State University

M2-I.4 **10:30 AM** **M2-I.10**
 Building Efficacy to Promote Voluntary
 Adoption of Risk Mitigation Behaviors
Wilson RS, Beetstra M, Doidge M
The Ohio State University

10:30 AM
 Effects of Experiencing Heat-Related
 Illness on Perceptions of Summertime
 Heat Risks and Protective Behaviors in
 Phoenix, AZ and Detroit, MI
*Chakalian PM, Harlan SL, Hondula DM,
 Larsen LS, Gronlund CJ, O'Neill MS*
Arizona State University

M2-I.6 **10:30 AM** **M2-I.11**
 Intervention and Mental Health in
 Disasters: Training for Psychology in
 Risk and Disaster Management
*Danyelle Stringari DS, Eduardo Pinheiro
 EGP*, Larissa Ferentz LMS, Murilo Noli
 MNF, Eveline Favero EF*
*Center for Studies and Research
 on Disasters of the State of Paraná
 (CEPED-PR)*

10:30 AM
 A 30% Chance of a Tornado?:
 Assessing Public Understanding,
 Risk Perception, and Responses to
 Probabilistic Tornado Warnings
*Demuth JL, Joslyn S, Savelli S, Qin C,
 Morss RE, Ash K*
*National Center for Atmospheric
 Research*

Sponsored by:
Risk Communication SG

10:30 AM – 11:30 AM

Mardi Gras Ballroom FGH, 3rd Floor

**M2-J Symposium: Heuristics,
 Biases and Other Seemingly
 Irrational Factors in People's
 Decisions Regarding Innovative
 Technologies, Foods and
 Other Consumer Goods**

Chair: Angela Bearth

10:30 AM **M2-J.1**
 Intuitive Toxicology Revisited: People's
 Understanding of Toxicological
 Principles and Implications for the Risk
 Perception of Chemicals
Bearth A, Saleh R, Siegrist M
*Consumer Behavior, Institute for
 Environmental Decisions (IED), ETH
 Zurich*

10:50 AM **M2-J.2**
 The Impact of Disgust on Risk
 Perception and Acceptance of Novel
 Food Technologies
Siegrist M, Egolf A, Hartmann C
ETH Zurich

11:10 AM **M2-J.3**
 How Different Types of Trust May
 Shape Support of Genetically
 Engineered Food
Dixon G
Michigan State University

Sponsored by:
Risk Communication SG

1:30 PM – 3:00 PM

Galerie 1, 2nd Floor

**M3-A Symposium: Benzene:
 Low Doses Issues**

Chair: Debra Kaden

1:30 PM **M3-A.1**
 Meta-analysis of Epidemiology
 Studies of Risk of Acute Myeloid
 Leukemia and Low-level Exposure to
 Benzene
Boffetta P, Mundt KA
*Icahn School of Medicine at Mount
 Sinai*

1:50 PM **M3-A.2**
 Reconstruction Historical Exposures
 to Benzene Associated with the Use of
 Benzene-Containing Solvents
Holton MW
Ramboll

2:10 PM **M3-A.3**
 Is Low-dose Metabolism of Benzene
 by Workers More Efficient at Very Low
 Exposure Concentrations?
Cox T
Cox Associates

2:30 PM **M3-A.4**
 Experimental Population-based
 Genetics Model and Benchmark Dose
 Response Concentration Estimates
 in Diversity Outbred Mice Based on
 in Vivo Genotoxicity to Low Level
 Benzene Exposure
French JE
*University of North Carolina at Chapel
 Hill*

Sponsored by:
Dose Response SG

1:30 PM – 3:00 PM

Galerie 2, 2nd Floor

**M3-B Roundtable:
 Prudent Risk Analysis**

Chair: Roger Flage

SRA has issued a list of key principles
 that express high quality and trust-
 worthy risk analysis. These principles
 provide an authoritative guidance
 on the fundamental principles to
 be adopted when conducting risk
 analysis. This roundtable follows up
 on the foundation provided by these
 principles, and aims for a discus-
 sion of how to achieve high quality,
 prudent risk analysis, understood as
 risk analysis that is characterized by
 or results from sound judgment and
 wisdom. Issues discussed will include
 concrete examples of prudent risk
 analysis, characteristics of prudent
 risk analysis, and how SRA can take a
 leading role in promoting prudent risk
 analysis.

Panelists:
 Terje Aven
 Katherine McComas
 John Lathrop
 Seth D. Guikema

Sponsored by:
Foundational Issues in Risk Analysis SG

1:30 PM – 3:00 PM	1:30 PM – 2:30 PM	1:30 PM – 3:00 PM	1:30 PM – 2:30 PM	1:30 PM – 2:30 PM
<p><i>Galerie 3, 2nd Floor</i> M3-C Symposium: Vaccine Communication II <i>Co-chairs: Barbara Rath, Frederic Bouder</i></p>	<p><i>Galerie 4, 2nd Floor</i> M3-D Sustainability and Infrastructure <i>Chair: Roshanak Nateghi</i></p>	<p><i>Galerie 5, 2nd Floor</i> M3-E Symposium: Risk Perception, Risk Controversies and Risk Management: Can Public Engagement with Values Strengthen Risk Management Practices? <i>Chair: Patricia Larkin</i></p>	<p><i>Galerie 6, 2nd Floor</i> M3-F Symposium: Climate Change Adaptation Planning for Coastal Areas: Risk Assessment, Mitigation, and Evaluation, Part II <i>Chair: Christian Beaudrie</i></p>	<p><i>Mardi Gras Ballroom ABC, 3rd Floor</i> M3-G Does Exposure Equal Dose? <i>Chair: Amina Wilkins</i></p>
<p>1:30 PM M3-C.1 Infectious Disease and Vaccination Management Among Internally Displaced People Living in Camp-like Settings in Nigeria: A Mixed Method Study <i>Ekezie W, Timmons S, Myles P, Pritchard C, Siebert P, Bains M, Murray R</i> <i>University of Nottingham</i></p>	<p>1:30 PM M3-D.1 Network Connectivity and Inland Waterways Sustainability: A Case Study of the Ganges-Brahmaputra-Meghna Delta <i>Baroud H, Karmanshah A</i> <i>Vanderbilt University</i></p>	<p>1:30 PM M3-E.1 @Risk - Strengthening Canada's Ability to Manage Risk <i>Gattinger M, Bratt D, Driedger M, Kuzma J, Lachapelle E, Nicholls S, O'Doherty K, Larkin P</i> <i>University of Ottawa</i></p>	<p>1:30 PM M3-F.1 Robust Funding Allocations for Nonstructural Flood Risk Mitigation in Louisiana's Coastal Zone <i>Johnson DR, Gomez Sierra S, Richardson Z, Chen Z</i> <i>Purdue University</i></p>	<p>1:30 PM M3-G.2 Does the Exposure of Glyphosate Real in Human Pregnancies? <i>Parvez S, Gerona R, Proctor C, Friesen M, Reiter J, Lui Z, Winchester P</i> <i>Indiana University Fairbanks School of Public Health</i></p>
<p>1:50 PM M3-C.3 Measles Vaccination and Vaccine Hesitancy in Austria – Anthropological Perspectives <i>Kutalek R, Gutkas K, Gribi J, Kössler P, Moser M</i> <i>Medical University of Vienna, Vienna Vaccine Safety initiative</i></p>	<p>1:50 PM M3-D.2 Repeated Disasters and the Increasing Costs to FEMA: Insights from Public Assistance Data <i>Reilly AC, Ghaedi H</i> <i>University of Maryland</i></p>	<p>1:50 PM M3-E.2 Risky Business: The Site Selection Process for Hosting Canada's Nuclear Waste Facility <i>Bratt D, Phillion X</i> <i>Mount Royal University</i></p>	<p>1:50 PM M3-F.2 Homeowner-Level Decision Support System for Mitigating Coastal Flood Risk In Louisiana <i>Sahan ZT, Chen FC, Jahanshahi MR, Delp EJ, Johnson DR</i> <i>Purdue University</i></p>	<p>1:50 PM M3-G.3 Aggregate Exposure of the Adult French Population to Pyrethroids <i>Darney K, Bodin L, Bouchard M, Côté J, Volatier JL, Desvignes V*</i> <i>French Agency for Food, Environmental and Occupational Health & Safety (ANSES)</i></p>
<p>2:10 PM M3-C.4 The Role of Story Telling, Film and User-centered Design in Infectious Disease Communication <i>Nicholson K, Rath B, Tobias J</i> <i>Ikana Media+Health, Vienna Vaccine Safety initiative</i></p>	<p>2:10 PM M3-D.3 Distributed Energy Resources and Challenges for a Sustainable Power System <i>Staid A, Castillo A, Watson JP</i> <i>Sandia National Labs</i></p> <p>Sponsored by: <i>Engineering and Infrastructure SG</i></p>	<p>2:10 PM M3-E.3 Risk Perception and the Interpretation of Uncertainty in Regulatory Assessments for Genetically Engineered Animals <i>Kuzma J, Williams T</i> <i>North Carolina State University</i></p>	<p>2:10 PM M3-F.3 Past Patterns and Trends in Simultaneity of Very Large Wildfires: Implications for Risk Management <i>Cullen AC, Podschwit H</i> <i>University of Washington</i></p> <p>Sponsored by: <i>Decision Analysis and Risk SG</i></p>	<p>2:10 PM M3-G.4 Traffic Density and Mortality Risk in the 1991 Canadian Census Health and Environment Cohort (CanCHEC) <i>Cakmak S, Hebbert C</i> <i>Health Canada</i></p> <p>Sponsored by: <i>Exposure Assessment SG</i></p>
<p>2:30 PM M3-C.5 Human-centered Infectious Diseases and Vaccine Communication – Bridging the Gap <i>Rath A</i> <i>Vienna Vaccine Safety Initiative</i></p> <p>Sponsored by: <i>Risk, Policy and Law SG</i></p>		<p>2:30 PM M3-E.4 To Engage, or not, the Public in the Management of Health Risk Issues: An Examination of Breast Cancer Screening and Childhood Vaccinations <i>Driedger SM, O'Doherty KC, Cooper E, Rotella A</i> <i>University of Manitoba</i></p> <p>Sponsored by: <i>Applied Risk Management SG</i></p>		

1:30 PM – 3:00 PM

Mardi Gras Ballroom D, 3rd Floor

M3-H Communicating Novel Emergent Risk

Chair: Jose Palma-Oliveira

1:30 PM M3-H.1
Psychophysics of Terror Attack Consequences

Baucum MP, John RS
University of Southern California

1:50 PM M3-H.2
Expert Perceptions of Synthetic Biology and Public Engagement

Wirz CD, Howell EL, Brossard D, Xenos MA, Scheufele DA
University of Wisconsin-Madison

2:10 PM M3-H.3
Deference, Risk, & Benefit in Public Perceptions of Human Genome Editing

Howell EL, Scheufele DA, Xenos MA, Brossard DB
University of Wisconsin-Madison

2:30 PM M3-H.4
Food Supplements: To be or Not to be Medicines

Palma-Oliveira J, Vaz P
University of Lisbon

Sponsored by:
Risk Communication SG

1:30 PM – 3:00 PM

Mardi Gras Ballroom E, 3rd Floor

M3-I Poster Platform: Managing & Measuring Cyber Security Risk

Co-chairs: Kenneth Crowther, Ben Trump

1:30 PM M3-I.1
Quantifying the Product Security Risks to the Producer Across the Products Lifecycle

Crowther KG
General Electric

1:30 PM M3-I.2
A Generic Tree of Cybersecurity Objectives

Couce-Vieira A, Rios Insua D
ICMAT-CSIC

1:30 PM M3-I.3
Application of Bayesian Network Analysis for Evaluation and Prediction of Network Vulnerabilities

Alexeev A, Cains MG, Crompton M, Khamkar A, Hoffman B, Cam H, Levitt K, Henshel D
Indiana University, University of California Davis, Army Research Laboratory

1:30 PM M3-I.4
Global Systemic Risk and Cyber Security

Larcey P, Cheng A, Nell A
University of Cambridge

1:30 PM M3-I.8
Quantification of Vulnerability Risk by Big Data Analysis from the Security Infrastructure

Allodi L, Massacci F*
University of Trento

1:30 PM M3-I.9
Measuring Systemic Cyber Risk

Welburn JW, Strong A, Romanosky S
RAND Corporation

1:30 PM M3-I.10
Cryptocurrency: Governance for What was Meant to be Ungovernable

Trump BD, Wells E, Trump J, Linkov I
US Army Corps of Engineers

Sponsored by:
Security and Defense SG and Decision Analysis and Risk SG

1:30 PM – 3:10 PM

Mardi Gras Ballroom FGH, 3rd Floor

M3-J Symposium: Climate Change Risk Perceptions and Communications

Chair: Bob O'Connor

1:30 PM M3-J.1
Climate Change Risk Perceptions and Communications

Yang JZ
University at Buffalo

1:50 PM M3-J.2
Public Perceptions of Climate Attribution

Dryden R, Morgan MG, Bostrom A, Bruine de Bruin W
Carnegie Mellon University, University of Washington, University of Leeds

2:10 PM M3-J.3
Motivated Reconstruction of Memory: How Worldviews Shape the Recollection and Communication of Climate Change Narratives

Böhm, Pfister, Salway, Fløttum
University of Bergen, Norway, Leuphana University, University of Sussex

2:30 PM M3-J.4
Climate Change Risk Perceptions and Feelings: Results from a Construal Experiment

Bostrom A, Crosman K, Joslyn S
University of Washington

2:50 PM M3-J.5
Discussant

O'Connor RE
National Science Foundation

Sponsored by:
Risk Communication SG

3:30 PM – 5:10 PM

Galerie 1, 2nd Floor

M4-A Symposium: Dose-Responses for Environmental Carcinogens: The Emerging Role of Threshold, Biphasic and other Risk Models

Chair: Kenneth Mundt

3:30 PM M4-A.1
The Historical Foundations of LNT and Non-Linearity in Radiation Biology

Thome C
Northern Ontario School of Medicine

3:50 PM M4-A.2
Current Practices in Estimating Cancer Dose-Response and Estimating Potential Responses Below Observed Chemical-Specific Data

Thayer KA
US EPA

4:10 PM M4-A.3
Carcinogen Dose-response and Lessons (to be learned) from Systems Biology

Andersen ME
ScitoVation LLC

4:30 PM M4-A.4
Epidemiological Evidence of Non-linear Risks of Exposure to Some Known Occupational Carcinogens

Mundt KA, Boffetta P
Ramboll, University of Massachusetts, University of South Carolina, Icahn School of Medicine at Mount Sinai

4:50 PM M4-A.5
A Risk Assessment Approach for Inorganic Arsenic That Considers Its Nonlinear Mode of Action

Clewell HJ, Gentry PR, Yager JA
Ramboll

Sponsored by:
Dose Response SG

3:30 PM – 5:00 PM

Galerie 2, 2nd Floor

M4-B Roundtable: Success Stories of Women in Risk Analysis

Chair: Aliya Sassi

The stated purpose of this year's annual meeting theme, "The Many Faces of Risk" is that "it meant to champion the need for diversity in our profession, including race, gender, and abilities, to ensure we are doing enough as a Society to cultivate and ensure a pathway for future leaders that reflect the diversity of our planet."

The interdisciplinary nature of SRA provides a unique opportunity for professionals of diverse educational backgrounds ranging from scientists – including social scientists – to engineers, to communication, medical, and legal professionals to network with other researchers and policymakers, to learn new ideas and present their results. This rich interdisciplinary environment lead to the formation of 17 specialty groups within the society providing members a community within their own disciplines to support a collective voice and promote their contributions to the field of risk analysis. Recognizing that community can extend beyond disciplines, the purpose of this roundtable is to bring together women in various fields of risk analysis as a community to share their personal experiences such as strategies they have developed to ensure their professional success, and reflect on the role SRA played in facilitating their success.

Success is both a destination and a journey; it can be measured by an individual's accomplishments, big and small. Whether one is just starting her professional career, somewhere at a mid-point, or already a recognized professional, each of us can relate to at least one aspect of this discussion. Participants will share some of their personal stories of successes and failures, struggles and accomplishments. Topics will include balancing work and personal life, combining motherhood and professional career, building a new career in a new country, overcoming graduate school struggles, taking personal risks, etc. The goal of this roundtable is to increase representation of women in risk analysis professions through retaining existing and attracting new women to this field.

Panelists:

Margaret MacDonell, Argonne National Laboratory
 Pamela Williams, E Risk Sciences, LLP and University of Colorado
 Gail Charnley, Independent Consultant and Yale School of Public Health
 Uni Blake, American Petroleum Institute
 Cristina McLaughlin, U.S. Food and Drug Administration

3:30 PM – 5:00 PM

Galerie 3, 2nd Floor

M4-C Roundtable: Periodic Review

Chair: Jonathan Wiener

This roundtable will discuss periodic review and lessons learned from agencies' experience with requirements to review risk regulatory policies every X years. Some agencies engage in such periodic review, others do not; what can we learn about how well it works in practice and how it could work better? Such periodic review can be one instrument for planned adaptive regulation – a process of monitoring, data collection, analysis, review and potential revision, thus shifting risk regulation from a one-time decision to an ongoing series of multiple sequential decisions with learning and updating. In this roundtable, key questions will include: (1) How do agencies view periodic reviews (e.g. as a burden or as an opportunity), and what can we learn from their experience? (2) How do stakeholders (e.g. industry, advocacy groups) view periodic reviews, and how does this affect their strategies? (3) How frequent should the optimal time period of review be (e.g. every 5 years, 10 years, when new information has arisen, etc.)? (4) Which data should be collected and analyzed, by whom, on which types of impacts, with how much transparency? (5) What kinds of policy revisions should be made based on such reviews, on what criteria? (6) Should policy revisions be discretionary choices (by whom), or automatic adjustments based on pre-set thresholds? (7) How can periodic review be better designed or implemented to foster better regulatory learning and outcomes? Participants will include: Jonathan Wiener (Duke U.), introduction and key questions; Chris Frey (NCSU), the 5 year reviews of the national ambient air quality standards (NAAQS) by CASAC and EPA; Jay Turner (Wash. U. in St. Louis), the 8 year reviews of air toxics standards (NESHAPS) by EPA; Deborah Aiken (DOT), the periodic reviews at DOT, including FAA and NHTSA; John Graham (Indiana U., former OIRA), the midterm review of the 2022-2025 CAFE/GHG standards by NHTSA/EPA/CARB; Clark Nardinelli (FDA), retrospective review at FDA, and whether FDA should conduct regular periodic reviews.

Panelists:

Frey, HC
 Turner, J
 Aiken, JD
 Graham, JD
 Nardinelli, C

Sponsored by:

Risk, Policy and Law SG

3:30 PM – 5:00 PM

Galerie 4, 2nd Floor

M4-D Riding out the Storm

Chair: Jinzhu Yu

3:30 PM M4-D.1
 Benefit-cost Analysis of Flood Risk Reduction Measures in Louisiana's 2017 Coastal Master Plan

Johnson DR, Fischbach JR, Groves DG Purdue University, RAND Corporation

3:50 PM M4-D.2
 Government Policy Development and Analysis for Hurricane Risk Management

Wang D, Davidson RA, Nozick LK, Trainor JE, Kruse J University of Delaware*

4:10 PM M4-D.4
 Probabilistic Mixture Models for Predicting Thunderstorm-Induced Power Outages

Kabir E, Guikema SD, Quiring SM University of Michigan

4:30 PM M4-D.5
 Assessing the Impact of Social Vulnerability on Community Resilience Using Hierarchical Models

Yu JZ, Murlidar SP, Baroud H Vanderbilt University

Sponsored by:

Engineering and Infrastructure SG

3:30 PM – 5:00 PM

Galerie 5, 2nd Floor

M4-E Roundtable: The Battle of the Guidelines: Four Competing Ideas for Domain-Specific Risk Management Guidelines

Chair: John Lathrop

The Applied Risk Management Specialty Group is writing a family of documents: Principles and Guidelines for Analytic Support of Risk Management. We've been developing ideas on those documents over two webinars and roundtables, each time advancing our thinking. With that background, we have written three example guidelines, one in each of three domains, and will compare them, and compare them with key reference documents such as the IRGC Risk Governance Framework. The three domains are as different as we could make them: terrorism risk management, oil & gas production risk management, and cultural heritage risk management. We will summarize the topics addressed in each of the Guidelines, marvel at how different they are, then confront the problem of how much uniformity to strive for in Guidelines across domains, and what uniformity that should be. The four panelists are outspoken and rude, so the discussion should have entertainment value. We have identified 21 challenges to be addressed in Guidelines in each domain. Some of those challenges: Capturing the risk generating process; characterizing the risk event space; reducing data down to effective decision guidance in a valid and reviewable way; assessing the uncertainties and validly taking them into account in risk management; considering scenarios "not on the list"; developing robust and resilient strategies; setting an adequate budget; validly choosing among alternative analyses; adversary modeling where it applies; data availability and collection; data validation; data management; data QA/QC; model validation; model documentation; and effective communication/advice into the actual risk management decision process. The panelists will each pose key dilemmas and challenges we have encountered in developing guidelines, then call for ideas and arguments from everyone in the room. One of our underlying agendas is to enlist others in our writing effort, in particular SRA members outside of our Specialty Group.

Panelists:

Steve Ackerslund
 John Lathrop
 Willy Roed
 Rob Waller

Sponsored by:

Applied Risk Management SG

3:30 PM – 5:10 PM

Galerie 6, 2nd Floor

M4-F Symposium: Greener Choices: Improving the Safety of Consumer Products through Chemical Alternatives Analysis

Chair: Christian Beaudrie

3:30 PM M4-F.1
 Facilitating California's Newly Required Alternatives Analyses for Chemically Safer Consumer Products: A Guide, Review of Existing Analyses, and Fact Sheets
Braithwaite SK California Environmental Protection Agency

3:50 PM M4-F.2
 Toward Safer Consumer Products: Using Multi-criteria and Structured Decision Making (SDM) Approaches to Support Chemical Alternatives Analysis
Beaudrie CEH, Malloy T, Corbett C, Lewandowski T, Zhou X Compass Resource Management Ltd.

4:10 PM M4-F.3
 The Many Meanings of "Safer": Toward a Clarifying Framework Without Consensus
Paoli GM Risk Sciences International

4:30 PM M4-F.4
 Alternatives Assessment and Informed Substitution at the Firm Level: Lessons Learned
Tickner J, Jacobs M, Eliason P UMass Lowell*

4:50 PM M4-F.5
 Application of the WHO-IPCS Dose-response Framework to the Human Toxicity Component of Life Cycle Impact Analysis
Chiu WA, Paoli G Texas A&M University

Sponsored by:

Decision Analysis and Risk SG

3:30 PM – 5:00 PM

Mardi Gras Ballroom ABC, 3rd Floor

M4-G Playing with Nature: The Challenges of Synthetic Biology

Chair: Ben Trump

3:30 PM M4-G.1
 Simulating the Dynamics of Gene Drive Propagation through Populations
Trail JB, Macal CM, Castiglioni AJ, MacDonell MM, Kikendall NL, Zvolanek EA
Argonne National Laboratory

3:50 PM M4-G.3
 Synthetic Biology: Evolution or Revolution? Outlining the Next Generation of Risk Governance and Risk Communication Challenges
Cummings CL
Nanyang Technological University, Singapore

4:10 PM M4-G.4
 Gene Editing Wildlife Triggers Greater Concern about “Messing with Nature” and “Playing God” than Gene Editing Applications Targeting Humans.
Kohl P, Brossard D, Scheufele D, Xenos M
University of Central Florida, University of Wisconsin-Madison

4:30 PM M4-G.5
 Gene Editing Technologies: Can Science Fiction Raise Risk Awareness?
Eichmeier AA, Bao L, Brossard D, Xenos MA, Scheufele DA*
University of Wisconsin-Madison

Sponsored by:
Ecological Risk Assessment SG

3:30 PM – 5:10 PM

Mardi Gras Ballroom D, 3rd Floor

M4-H Novel Approaches & Their Applications in Microbial Risk Assessment

Chair: Regis Pouillot

3:30 PM M4-H.1
 Modulating Prevalence Estimates for Salmonella in Chicken Using Whole Genome Sequencing Data for Incorporation into a Risk Assessment Framework
Karanth S, Pradhan AK
University of Maryland, College Park

3:50 PM M4-H.2
 Use of Graph Theory and Networks to Insure Whole Bacterial Genome Sequencing Data Connectedness with Food Safety Epidemiological and Control Data – the Case of Salmonella Enterica
Moez Sanaa MS, Regis Pouillot RP, Francisco Garces-Vega FGV, Errol Strain ES, Van Doren JM
CFSAN - FDA

4:10 PM M4-H.3
 A Graphical Tool to Better Explore Links between Environmental, Food and Clinical Strains of Pathogens – the Case of Listeria Monocytogenes
Pouillot R, Sanaa M, Garces-Vega F, Strain E, Van Doren JM
Consultant / FDA-CFSAN

4:30 PM M4-H.4
 An Agent-Based Model for Pathogen Persistence and Cross-Contamination Dynamics inside a Food Manufacturing Facility
Mokhtari A, Van Doren JM
FDA-CFSAN

4:50 PM M4-H.5
 A Predictive Model for Survival of Escherichia coli O157:H7 in Manure-Amended Soil
Pang H, Mokhtari A, Chen Y, Oryang D, Ingram D, Van Doren JM
US Food and Drug Administration

Sponsored by:
Microbial Risk Analysis SG

3:30 PM – 5:10 PM

Mardi Gras Ballroom E, 3rd Floor

M4-I Symposium: Game Theory, Decision Analysis for Homeland Security and Disaster Management

Chair: Jun Zhuang

3:30 PM M4-I.1
 Game-Theoretic Modeling of Pre-Disaster Relocation
Bier VM, Du H, Zhou Y
University of Wisconsin-Madison

3:50 PM M4-I.2
 An Empirical Behavioral Study of Deterrence: An Analog Cyber Attack Simulation Game
Kusumastuti S, John RS
University of Southern California

4:10 PM M4-I.3
 Assessing the Effectiveness and Interdependence in Capabilities-Based Planning for Emergency Preparedness
MacKenzie CA, Suresh R
Iowa State University

4:30 PM M4-I.4
 Behavioral Detection of False Social Media Posts Following Soft-target Terror Attacks: A Signal Detection Framework
Zhao M, John RS
University of Southern California

4:50 PM M4-I.5
 Comparative Analysis of Misinformation Diffusion and Debunking during Hurricanes Harvey and Irma
*Kyle H, Zhuang J**
University at Buffalo

Sponsored by:
Security & Defense SG

3:30 PM – 5:10 PM

Mardi Gras Ballroom FGH, 3rd Floor

M4-J Navigating Fear & Crisis: Implications for Health & Safety Communication

Chair: Cara Cuite

3:30 PM M4-J.1
 Scared Yet compassionate? Exploring the Order Effects of Risk Messages Communicating Bat Rabies and White-nose Syndrome
Lu H, McComas KA, Kretser H, Lauber B
Cornell University

3:50 PM M4-J.2
 The 2016-17 Swedish Campylobacter Scandal
Lofstedt R
Kings College London

4:10 PM M4-J.3
 Is It Really An Abundance of Caution? Experimental Study to Improve Food Safety Crisis Communication
Wu F, Hallman WK, Cuite C
Rutgers University

4:30 PM M4-J.4
 Prior Knowledge’s Differential Effects on Fear Appeal Outcomes
Harris KA, Yang JZ, Feeley TH
University at Buffalo, State University of New York

4:50 PM M4-J.5
 Using EPPM to Evaluate the Effectiveness of Fear Appeal Messages Across Different Media Outlets to Increase the Intention of Breast Self-Examination among Chinese Women
Chen LC, Yang XY
Sun Yat-sen University

Sponsored by:
Risk Communication SG

Preservation Hall, 2nd Floor

Poster Session

Applied Risk Management

P.1 A Disaster Simulation Game Using a Learning Management System
Maeda Y, Igarashi H
Shizuoka University

P.2 Characteristic-grouped Adiposity Indicators in Determining Adolescent Potential and IDF-defined Metabolic Syndrome: Development and Validation of Risk Screening Tools
Chin YT, Lin WT, Wu PW, Lee CY, Tsai S, Huang HL, Lee CH
Kaohsiung Medical University

P.3 Disaster Preparedness Indicator: A Pilot Study in the State of Paraná, Brazil
*Ferentz LMS, Pinheiro EG, Garcias CM, Acordes FA, Stringari D**
Center for Studies and Research on Disasters (CEPED), Pontifical Catholic University of Paraná (PUCPR)

P.4 Evaluation of Countermeasures for Reducing Unusual Chemical Release Triggered by Serious Natural Hazard: Case Study in the Yodo-river Basin
Kojima N, Toyoda M, Tabuchi Y, Matsuura M, Zhou L, Tokai A
Graduate School of Engineering, Osaka University

P.7 Evaluation of Health Hazards Attributable to Exposure to Per- and Polyfluoroalkyl Substances Present in Groundwater at the Former Schilling Air Force Base, Salina, Kansas: A Case Study
Rapal KM, Kline TR
AlterEcho

P.8 Minimizing Risk by Improving Response to Technological Disasters: the Case of Oiled Fauna in the South of Brazil
Stringari D, Koproski K, Pinheiro EG, Grando ES, Mangini PR, Duda LJ
Disaster Research Center of the Paraná State

P.9 The Ecological Risk Assessment of Triphenyltin in Taiwan
Huang SY, Wu KY, Wu HH
National Taiwan University

P.10 Discussion for the Framework of Responsible Care Based on the Hazard and Exposure Information by Using Japanese PRTR
Takahashi K, Kojima N, Zhou L, Horimoto S, Fujioka M, Nguyen H, Xue M, Tokai A
The Division of Sustainable Energy and Environmental Engineering, Graduate School of Engineering, Osaka University

P.11 Re-envisioning the U.S. National Library of Medicine's Toxicology and Environmental Health Online Resources
Thorne S, Kovacs D, Austin L, Chen L, Chang F, Hakkinen P, Collier Z*
Decision Partners, National Library of Medicine, Ivey Business School at Western University

P.12 The Effect of HOMA-based Insulin Resistance on the Association of Sugar-sweetened Beverage Intake and Clustering of Cardiometabolic Risk Factors in Adolescents
Wu PW, Chin YT, Lee CY, Lin WT, Tsai S, Huang HL, Lee CH
Department of Public Health, College of Health Science, Kaohsiung Medical University

P.13 Current Efforts on Developing ISO Guidance on Emerging Risk Management for Enhanced Resilience
Jovanovic AS, Brown J
EU-VRI

Decision Analysis and Risk

P.17 A Risk Modeling Framework for Integrating Inventory Uncertainty Using Grey Multi-objective Programming in Analyzing Extreme-event-related Disruptions on Interdependent Systems
Mamino LL, Resurreccion JZ
University of the Philippines

P.19 Are Mitigation Efforts Effective at Reducing Natural Disaster Risk?
Perrucci D, Baroud H
Vanderbilt University

P.20 Using Bayesian Networks to Assess the Risks Resulting from an Erroneous Understanding of Causal Relations
Borsuk ME, Mallampalli V
Duke University

P.22 A Multi-Criteria Decision Analysis (MCDA) Data Fusion Approach for Uncertainty Reduction in Data Sparse and Decision Support Applications
DeSmet DC, Loney DA, Cegan JC, Linkov I
Carnegie Mellon University, Army Corps of Engineers

P.23 A Risk Assessment Approach to Evaluate the Effectiveness of Screening Procedure
Rabiei E, Diaconeasa MA, White M, Mosleh A
University of California, Los Angeles

P.25 Predictive Modeling of the U.S. Water Withdrawals and Identifying the Key Risk Factors
Wongso E, Nateghi R, Zaitchik B, Quiring S, Kumar R*
Purdue University

Economics and Benefit Analysis

P.28 Adapting an English Methodology to Assess Health Cost Benefits of Upgrading Energy Inefficient French Dwellings
*Ezratty V, Ormandy D, Cabanes PA**
Service des Etudes Médicales EDF

P.29 Big Data and Exposure Assessment: Using Food Purchase Data to Develop Campylobacter Food Source Attribution Estimates
Hoffmann S, Cole D, Todd J, Ashton L, Berck P
USDA Economic Research Service

Emerging Nanoscale Materials

P.30 Nanomaterial Hazard and Physical/Chemical Property Data Collection for Screening
Patterson J, Pecquet A, Haber L, Oveson J, Parker A, Matheson J, Thomas T, Gadagbui B, Allen C*
University of Cincinnati, U.S. Consumer Product Safety Commission

Engineering and Infrastructure

P.31 Regulation Compliance and Petro Fuel Filling Station Locations in a Metropolitan
Ariavie GO, Emetitiri RE, Abumere IU, Ikpe A, Ekhusuehi V, Agho N
Federal University

P.32 Modeling Supply Inadequacy Risks in the Regional Electricity Sector under Climate Change Scenarios
Mukherjee S, Nateghi R
University at Buffalo, SUNY

P.33 Projecting Urban Water Supplies into the Future: A Case for the Complementary Nature Predictive and Explanatory Models
Obringer R, Rao PSC, Nateghi R
Purdue University

P.34 Public Acceptance on Hydrogen Fueling Stations with and without Risk Information
Ono K, Kato E, Tsunemi K
National Institute of Advanced Industrial Science and Technology

P.35 Analyzing Interdependencies Among Infrastructures Based on Big Data and Resilience Indicators
Jovanovic AS, Klimek P
EU-VRI

P.36 Improving Intensity Duration Frequency Charts by Incorporating the Effect of Climate Change
Hu H, Ayyub B
University of Maryland College Park

P.37 Risk Perception of NASA Engineers: A Fuzzy Trace Theory Approach
Marti DM, Broniatowski DB
The George Washington University

Exposure Assessment

P.43 Novel Risk-Based Approach to Address Amines Released in Texas and New Mexico
Tyndall KH, Thomas BD
Pastor, Behling & Wheeler, LLC

P.44 Artificial Intelligence in Systematic Literature Reviews: A Case Study from Human Health Risk Assessment
Varghese A, Cawley M, Hobbie K, Henning C, Hubbard H
ICF

P.45 Automated Technologies for Writing PECO Summaries and Extracting Media Concentrations: A Case Study for Phthalate Exposure
Hubbard H, Henning C, Cawley M, Hobbie K, Varghese A
ICF

P.46 Assessing the Health Risks of Tartrazine in Taiwan
Chang CH, Wu KY, Wu CL
National Taiwan University

P.47 The Risk Assessment of Saccharin in Candied Fruits in Taiwan
Cho KF, Wu KY
National Taiwan University

P.48 Risk Assessment of Cadmium in Rice Using Taiwan Food Consumption Database and Taiwan Traditional Snacks Consumption Database
Chou TH, Ho WC, Chiu SU, Chang PH, Lai TR, Huang HY
China Medical University

P.49 Health Concerns in South Philadelphia: A Community-Based Risk Assessment and Analysis of Multiple Exposures in a Historic Urban Setting
Hibbert K, Richmond-Bryant J, Gross-Davis CA, Reyes J, Essoka JD, Fry J, Jarabek AM
U.S. Environmental Protection Agency

P.50 Risk Assessment of Methylmercury in Rice Using Taiwan Food Consumption Database and Taiwan Traditional Snacks Consumption Database
Ho WC, Chiu SY, Chang PH, Lai TR, Chou TH, Huang HY
China Medical University

P.51 Risk Assessment Certification Program for Toxic and Chemical Substances in Taiwan
Ho WC, Huang TL, Lin SW, Yu HL
China Medical University

P.52 The Risk Assessment of 3-MCPD Residue in Soy Sauce in Taiwan
Hsieh CS, Wu KY
National Taiwan University

P.53 A Cross-Country Probabilistic Health Risk Assessment of 4-Methylimidazole in Selected Food Products
Hsu CY, Wu KY
National Taiwan University

P.54 The Risk Assessment of K-40 in Daily Food from Markets in Three Major Cities and Around Nuclear Plants
Hsu HH, Wu KY, Wu CL
National Taiwan University

P.55 Cumulative Risk Assessment of Multiple Residual Pesticide in Tea Leaf in Taipei City, Taiwan
Kang FC, Hsiao IL, Hsing HH, Chuang YC
National Taiwan University

P.56 Probabilistic Assessment of Risk for Heavy Metals, Lead and Mercury, in Chinese Herbal Medicines
Lin PH, Lo CY, Chuang YC, Chang BS, Horng RL, Chiang SY
China Medical University, National Taiwan University

P.57 Sensitivity Analysis of Exposure Parameters for Tobacco Product Substantial Equivalence Evaluation
Liu C, Parms T, Marano K
RAI Services Company

P.59 The risk assessment of Dimethoate Residue in Selected Food Products in Taiwan
Yen MT, Wu KY
National Taiwan University

P.60 Dietary Risk Assessment of Five Heavy Metals Via Lotus Root for Chinese Consumers
Zhao HY, Wang W, Liu YL, Yang GL, Wang Q
Institute of Quality and Standards for Agricultural Products, Zhejiang Academy of Agricultural Sciences

Foundational Issues in Risk Analysis

P.61 Evaluation of Carcinogenic Potential using a Surrogate Read-across Approach
Rhoades J, Kawa M, Carlson-Lynch H, Melia J, Morlacci L, Kaiser J, Zhao QJ, Dean J
SRC Inc, U.S. EPA, NCEAH

P.63 Risk Analysis Education and Certification in the Multi-Faced Discipline
Huang TL, Yu HL, Ho WC, Lin SW
National Cheng Kung University

Microbial Risk Analysis

P.64 Case Study of Thermal Inactivation Steps Intended to Reduce the Risk of Foodborne Illness from Consumption of Wheat Flour
Casulli KE, Jung J, Schaffner DW
Michigan State University, Rutgers University

P.65 Incorporation of Molecular Data into a Risk Assessment Framework to Re-evaluate the Prevalence Estimates for Salmonella in Chicken
Karanth S, Pradhan AK
University of Maryland, College Park

P.66 Process and Agent-Based Modeling for Risk Assessment of Norovirus on Frozen Berries
Miranda R, Schaffner DW
Rutgers, The State University of New Jersey

P.67 From Farm to Packaging: A Qualitative Microbiological Risk Assessment for Salmonella enterica during Milk Chocolate Production
Oni RA, Pradhan AK, Ge C, Buchanan RL
University of Maryland College Park, MARS Global Food Safety Center

P.68 Evaluating Food Safety Risk of Toxoplasma Gondii in Muscle Tissues of Naturally-infected Meat Animals in the United States
Rani S, Dubey JP, Pradhan AK
University of Maryland, College Park

Occupational Health and Safety

P.70 CohoRTE: A Cohort of RTE Retirees Professionally Exposed to 50 Hz Magnetic Field
Souques M, Duburcq A, Magne I, Babin C, Deschamps F, Cabanes PA*
Electricity of France

P.71 Facing Parental Cancer: Social Support for the Only Children in China
Chen L, Chen M*
Sun Yat-sen University

Resilience Analysis

P.72 Scenario Based Resilience and Efficiency Analysis of Container Port Transportation Networks
Andrews DJ, Lambert JH
University of Virginia

P.73 Evaluating Risk and Resilience in Engineering with Nature Projects
Ali R, Bridges T, Fox-Lent C, Kurth M, Linkov I, Suedel B
Carnegie Mellon University, US Army Corps of Engineers

P.75 Systemic Risk Analysis of the Impact of Natural Gas Transmission Pipeline Network Disruptions on Power Generation
Macal CM, Tatara ER, Kavicky JA, Moog ER, Um PJ, Miller RC, Medina Cuevas PX
Argonne National Laboratory

P.76 Risk-Based Decision-Making for Blood Safety Management in Taiwan
Matanhire TB, Lin SW*
National Taiwan University of Science and Technology

P.77 A Method to Include Preference Uncertainty in Benefit-cost Analysis
Baik S, Davis AL, Morgan MG
Carnegie Mellon University

P.78 ITRC TPH Risk Evaluation at Petroleum Contaminated Sites
Ries DN, Booze T, Kwiecinski M, Thun R
Interstate Technology and Regulatory Council (ITRC) TPH Risk Evaluation Team and MI DEQ

P.79 Final Assessment of Space Weather Risk Perception in Brazil
Caruzzo A, Ribeiro JR, Denardini CM, Rezende Costa JE
McGill University, Aeronautics Institute of Technology, National Institute for Space Research (INPE)

P.80 Risk Analysis to Support Characterizing and Communicating Safety and Security Risks in Biological Laboratories
Caskey A
Sandia National Laboratories

P.81 NTP Case Study: Examining the Utility of In Vitro Tox21 Bioactivity Assays for Prioritization and Safety Assessment of Botanical Dietary Supplements
Hubbard TD, Hsieh JH, Sipes NS, Collins BJ, Auerbach SS, DeVito MJ, Walker NJ, Rider CV
Division of the National Toxicology Program, NIEHS

P.82 Derivation of an Oral Reference Dose for Propylene Glycol Monomethyl Ether and Propylene Glycol Monomethyl Ether Acetate: Challenges and Solutions in Application of a Published PBPK Model

*Magurany KA, Cox KC
NSF International*

P.83 A Risk-based Spatiotemporal Groundwater Management Approach

*Lee CH, Yu HL
National Taiwan University*

P.84 Together We Thrive: Social Capital and Disaster Resilience after Hurricane Harvey

*Chu H, Yang JZ
University at Buffalo, The State University of New York*

P.85 Getting Unstuck: Application of Risk Communication Principles to Improve Project Schedules and Outcomes at Hazardous Waste Sites

*Ackerlund WS
Ecology and Environment*

Risk Communication

P.86 Restoring Biotechnology's Moral Fiber? Lessons from a Stakeholder Workshop on Genetically Modified American Chestnut Trees and Public Engagement

*Binder AR, Barnes JC, Barnhill-Dilling SK, George D, Kokotovich A, Rivers L, Sudweeks J, Delborne JA
NC State University*

P.87 Data Visualizations – Making the Most of Big Data

Bornstein K, Skuce C, Hobbie K, Henning C, Williams A, Feiler T
ICF*

P.89 Social Amplification of Risk Framework 2.0: Theoretical and Methodological Applications

*Chakalian PC, Binder AR, Turner VK, Schook ES, Ajayakumar J, Hondula DM
Arizona State University*

P.90 How Does Structural Social Position Affect Online Social Support Provision Among Chinese Gay Men Living with HIV/AIDS?

*Chen L, Huang X, Zhang F
Sun Yat-sen University*

P.91 Distance or Valence? Exploring Motivated Reasoning Related to Climate Change

*Chu H, Yang JZ
University at Buffalo, The State University of New York*

P.92 Do Consumers Notice the Source of Messages about Foodborne Illness Outbreaks?

*Cuite CL, Wu F, Hallman WK
Rutgers University*

P.94 Reconciling Visions of the Environment: Using Photovoice for Community-Based Participatory Research in Coastal Management

*Duffy KP, Rickard LN
University of Maine*

P.95 Deciding to Participate in Clinical Trials: Risk Perception and Information Needs of Cancer Patients

*Gerido LH, Cole CR
Florida State University*

P.98 The Impact of Monetary Cost on Chinese Women's HPV Vaccination Intentions

*Liu S, Chu H, Yang JZ
University at Buffalo, The State University of New York*

P.99 Exploring the Role of Incidental and Message-induced Compassion and Anger in Health Risk Communication about Pollution

*Lu H
Cornell University*

P.100 Communicating Risk in the Immediate Aftermath of a Disaster: Challenges and Opportunities

*Manandhar R
Arkansas Tech University*

P.101 Collaborative Emergency Management for Effective Disaster Risk Communication

*Manandhar R
Arkansas Tech University*

P.102 Gambling Behavior and Prevalence of Illegal Gambling where Legal Options Exist

*Steinhardt JS
Michigan State University*

P.103 Eye-Tracking the Storm: Evaluating Visual Risk Information Seeking and Processing

*Sutton J, Fischer L
University of Kentucky*

P.104 No More Niceness: Exploring the Effects of Aggressive and Stigmatize Communication in Climate Change Debate

*Yuan S, Lu H
Northern Illinois University*

P.106 Risk Communication for Individual Decision-making: An Empirical Study from Fukushima During a Post-emergency Period

*Nishizawa M
Litera Japan Co.*

P.107 Risk Perception of Pregnant Women on Health Effects of Electromagnetic Fields and a Booklet of "EMFs and Health for Pregnant Women"

*Ohkubo C
Japan EMF Information Center*

P.108 Climate and Energy Literacy: Final Findings from a UK Study.

*Warren GW
King's College London*

P.109 What do People Think about When Thinking "Climate Change"?

*Yang J, Chu H, Rickard L, Feeley T
University at Buffalo*

P.110 Research Engineer

*Camin JMC
Orange Labs*

P.111 Public vs. Private Information in Risk Communication

*Wang Y
Georgia Institute of Technology*

P.112 Examining Collectivism-oriented Risk Characteristics: Analyzing Data from China's First National Survey of Public Risk Perception

*Zhang J, Su Y, Jia H, Chen L
Sun Yat-sen University, Hong Kong Baptist University, Cornell University*

P.114 Perceptions of Uncertain Risks in Societal Groups

*Jansen T, Claassen L, van Kamp I, Timmermans DRM
Dutch National Institute for Public Health and the Environment (RIVM), VU Medical Center Amsterdam*

P.115 Examining the Interaction between Public Participation and Risk Communication – the Case of Nuclear Power in China

*Deng L, Jia H
Sun Yat-sen University and Cornell University*

P.116 Outrage Factors in Climate Change Risk Perception

*Haque M
The University of Mississippi*

Risk, Policy & Law

P.118 Health and Environmental Protection in Hydraulic Fracturing: A Focus on British Columbia and Alberta, Canada

*Larkin PM, Gracie R, Krewski D
University of Ottawa*

P.119 Considerations in Human Health Risk Assessment of Low-Cost Monitoring Data

*Jones L, Patterson J, Lange S
Texas Commission on Environmental Quality, University of Cincinnati*

P.120 IRGC's Guidelines for the Governance of Systemic Risks

*Bejtullahu K, Florin MV, Trump B
EPFL International Risk Governance Center (IRGC)*

P.121 Will Digital Technologies Threat Private, Risk Based, Health Insurances?

*Eisinger F, Hoy M
Paoli-Calmettes Institut INSERM*

P.123 Re-imagining Risk to Improve Interagency and Public-Private Collaboration

*Cohen AA
Duke University*

P.125 Hazard Assessment of Hydrofluorocarbons (HFCs) for Potential Impacts to National Defense

Bruckner MS, Vogel CM, Glaccum WW, Rak A, Scanlon KA
Noblis Inc., Department of Defense*

P.126 Quantitative Risk Assessment of Hydrogen Fueling Station That Uses Organic Hydride

Tsunemi K, Yoshida K, Yoshida M, Kato E, Kawamoto A, Kihara T, Ono K, Saburi T
National Institute of Advanced Industrial Science and Technology

P.127 Hazard Assessment of 1,4-Dioxane for Potential Impacts to National Defense

Vogel CM, Glaccum WW, Rak A, Scanlon KA
Noblis Inc., Department of Defense

P.128 Characterising the Robustness of Coupled Power-Law Networks

Johnson C, Flage R, Guikema SD
University of Stavanger, University of Michigan

P.129 Risk-Cost-Benefit Analysis for Access Reconfiguration of Transportation Networks

Alsultan M, Lambert JH
University of Virginia

P.130 Breaking the Routine: A New Approach of Airport Security Measures

Stotz T, Ghelfi SM, Bearth A, Siegrist M
Swiss Federal Institute of Technology Zurich

P.131 Who Should Pay for Interdependent Security Risks? On the (Un)fairness of Security Taxes for Small and Large Airports

Kuper GM, Massacci F, Williams JM*
University of Trento

P.132 An Adversarial Risk Analysis Approach for Differential Games: A Botnet Defense Model

Gonzalez-Ortega J, Rios Insua D, Gomez-Corral A
ICMAT (CSIC-UAM-UC3M-UCM)

P.133 Metacognition and Phishing Emails: Do People Know When They Are Taking Risks?

Canfield C, Fischhoff B, Davis A
Missouri University of Science and Technology, Carnegie Mellon University

P.135 Hazard Screening of Flavoring Compounds Based on EU Chemical Groups: Identification of Principle Endpoints of Concern for Risk Assessment

Guerrette Z, Wang B, Whittaker MH
ToxServices LLC

P.137 Importance of Scientifically-Current Toxicity Factors: Recent Dose-Response Assessments by the State of Texas

Haney JT
Texas Commission on Environmental Quality

P.138 Developing Health-Based Screening Levels for Lead in Environmental Media

Chiger A, Lynch MT, Houlihan J
Abt Associates

P.139 Risk Assessment of Organic Lead in Rice Products Using Taiwan Food Consumption Database and Taiwan Traditional Snacks Consumption Database

Lai TJ, Ho WC, Chiu SY, Chang PH, Huang HY
China Medical University

P.140 In Silico Prediction of Concentration-Response and Cytotoxicity

Druwe IL, Wheeler MW
U.S. Environmental Protection Agency, Center for Disease Control, National Institute for Occupational Safety and Health

P.141 The Risk Assessment of Dichlorvos Residue in Vegetables and Fruits in Taiwan from 2012 to 2017

Xiao P, Wu KY, Wu CL
National Taiwan University

Late Breaking

P.145 History of the Algerian Natural Hazards Insurance Pool Towards Resilience and Sustainable Development

Benouar D
University of Sciences & Technologies Houari Boumediene

P.146 Assessing Human Health Risks of Non-Cancer Effects Due to Short-Duration and Intermittent Exposures to Chemicals at Contaminated Sites: A Case Study on the Slate Islands, Ontario, Canada

Somers NL, Li-Muller A, Mohapatra A, Petrovic S
Health Canada and University of Toronto

P.147 Utilizing Cumulative Risk Assessment Principles in Developing Targeted Intervention Strategies to Reduce the Prevalence of Work-Related Asthma

Johns DO, Virji MA, Park JH, MacDonell MM, Cox-Ganser JM
CDC/NIOSH, Argonne National Laboratory

P.149 A Bayesian Networks and Risk Dynamics Simulation Coupled Approach to Accidental Water Pollution Risk Assessment for Mine Tailings Ponds in Guanting Reservoir Watershed, Zhangjiakou City, China

Liu J, Liu RZ, Zhang ZJ*
Beijing Normal University, China

P.150 Visualizing Critical Infrastructure Dependencies and Interdependencies

Powers DG, Rath C, Baumgardner K, Howard PM
RS21

P.151 Understanding Impacts of Hurricane Landfall in Charleston, SC

Powers DG, Rath C, Baumgardner K, Howard PM
RS21

P.152 Pharmacokinetic Models for Quantifying Mother-to-Offspring Transfer of Lipophilic Chemicals

Kapraun DF, Schlosser PM, Carlson LM, Lehmann GM
US Environmental Protection Agency

P.153 A Quality Assurance Project Plan to Evaluate Physiologically-Based Pharmacokinetic (PBPK) Models for Use in Risk Assessment

Schlosser PM, Kapraun DF, Itkin C, Lin YS, Sasso AF, Morozov V
NCEA, U.S. EPA

P.154 Measuring Urban Resilience Using Access to Essential Services: Case Study with Hurricane Florence

Logan TM, Guikema SD
University of Michigan, Ann Arbor

P.155 Deliberating the Public Acceptability of Energy Storage in Great Britain

Pidgeon NF, Thomas G, Demski C
Cardiff University

P.156 Evaluation of Countermeasures for Reducing Unusual Chemical Release Triggered by Serious Natural Hazard: Case Study in the Yodo-river basin

Kojima N, Toyoda M, Tabuchi Y, Matsuura M, Zhou L, Tokai A
Osaka University

P.157 Quantitative Risk Assessment (QRA) of Compounds Generated from Electronic Nicotine Delivery Systems (ENDS) and Cigarette Smoke

Anderson C, Prabhakar B, Wiecinski P, Ehman KD, McKinney WJ Jr, Enters EK
Lancaster Laboratories Inc. and Altria Client Services LLC

P.158 PFAS – The European Perspective

Wilkinson J, Connell A, Sullivan R
Ramboll

P.159 An Evaluation of Measurement Error Correction in Radiation Risk Analysis Focusing on Low Dose Exposure

Misumi M
Radiation Effects Research Foundation

P.160 Aggregate Risk of Reactive Nitrogen under Anthropogenic Disturbance in the Pearl River Delta Urban Agglomeration

Dong Y, Xu LY
Beijing Normal University

P.161 Embodied Primary PM_{2.5} Emissions and Health Risk Assessment in International Trade

Zheng HZ, Xu LY
School of Environment, Beijing Normal University

P.162 Impacts of Showering Compliance Rates on the Risk of Infection from *Cryptosporidium* spp. in Swimming Pools

Dean KJ, Tolofari D, Hull N, Pearce-Walker JI, Medema G, Weir M, Mitchell J
Michigan State University

P.163 The Use of Top-Down Risk Communication Strategies and Their Effectiveness in the Case of the ASARCO Tacoma Smelter

Wilson SJ
King's College London

P.164 An Enhanced Model for Assessing Choking Risk in Children

Gregori D, Berchiolla P, Lorenzoni G
University of Padova

P.165 Per- and Polyfluoroalkyl Substances (PFAS): Status of Exposure and Health Studies Surrounding an Evolving Issue

Kaden DA, Huang CK, Dell L
Ramboll

P.166 The Challenges of developing Resilience to Co- and Post-Seismic Hazards in Sichuan Province, China, Site of the Devastating 2008 Wenchuan Earthquake

*MacGillivray B, Hales TC, Gong Y, Ran J, Rezgui Y, Cere G, Xuanmei F, Horton A, Francis O
Cardiff University*

P.167 The Association Between Dietary Toxins and Microbial Infection in Tanzanian Children

*Chen C, Mitchell N, Wu F
Michigan State University*

P.168 Estimating the Burden of Disease of Congenital Toxoplasmosis in Denmark

*Georgiadis S, Pires SM
Technical University of Denmark*

P.169 Energy Reform Policy and risk Perception of Laypeople: A Unique Experience in Taiwan

*Chang HL, Song HT
Legislative Yuan, Taiwan and National Yang-Ming University*

P.170 Flu vs. Influenza: Do different Terms Contribute to Disease Perceptions?

Kong WY, Eng N
Nanyang Technological University and North Carolina State University*

P.171 Assessing the Exposure Associated with Cholesterol Oxidation Products in Food Using Dietary Intake Modeling

Jain E, Mitchell J
Michigan State University*

P.172 Development and Testing of an Instrument to Measure Workplace Perceptions, Communications and Behavioural Intentions to Reduce Modern Slavery Risks in UK Business Supply Chains

*Cakir MS, Wardman JK, Trautrim A
University of Nottingham*

P.173 Risk Management and Local Governance Strategies to Prevent and Control Hexavalent Chromium Exposures with Public Health-based Air Standards

*Butler KB, Montes CM, Sobero RS, Contreras CC, Rangan CR
Los Angeles County Department of Public Health*

P.174 Comparing Opportunistic Premise Plumbing Pathogen Infection Risks Between Conventional and Low-Flow Fixtures

*Julien R, Rasheduzzaman M, Brooks Y, Huang W, Gurian PL, Weir MH, Mitchell J
Michigan State, Drexel, Cornell, Ohio State*

P.175 Near-Ground Gradient and Interference-Free Ozone Measurements In A Suburban-Commercial US location

*Ollison WM, Leston AR
American Petroleum Institute, AirQuality Research & Logistics, LLC*

P.176 A Quantitative Microbial Risk Assessment Model for Intervention Targeting of the San Diego Homeless Population HepA Outbreak

*Weir MH, Wood T, Gnegy M, Spaur M, Sebastian J, Mitchell J
The Ohio State University*

P.177 Climate Change Risk Communication Strategies Based on Public Perception Analysis

*Lee S
Korea Environment Institute*

P.178 New Science and Considerations in the Re-evaluation of Health Canada's Guideline for Canadian Drinking Water Quality on Manganese

*MacAulay J, Cherry A, Payne SJ, Carrier R, Lemieux F
Water and Air Quality Bureau, Health Canada*

P.179 The Use of GISweb VICON as a Tool to Support Disaster Risk Management in Civil Defense in Curitiba, Brazil

Acordes FA, Ferentz LMS, Stringari D, Pinheiro EG
University Centre for Disaster Studies and Research (CEPED/PR)*

10:30 AM – 12:00 PM

Galerie 1, 2nd Floor

T2-A Roundtable: RO Events on Communicating Evidence for Benefits and Risks of Raw Milks

Chair: Warner North

SRA RO partners held events in 2018 on a highly controversial topic often communicated in the media solely at the emotional level: risks of pasteurized and unpasteurized milks from humans and cows. At present, access to fresh unprocessed human donor milk for NICU infants and fresh unprocessed bovine (cow) milk in Australia, New Zealand, the UK, and the US is limited, and conflicting risk communications in the media confuse consumers and regulators. Rarely do media reports consider the scientific evidence for benefits AND risks in light of this decade's 'microbiome revolution'. SRA ROs provided an open environment for both pro- and anti-pasteurization advocates to consider new evidence in a manner consistent with objective and transparent analytic-deliberative process. Partnering ROs around the world invited technical experts to present on key advances in scientific knowledge of the microbiota of milks that challenge outdated paradigms based on the assumption that the presence of pathogens is predictive of illness and death for breast and bovine milks. SRA Fellows served as rapporteurs who considered evidence presented by microbiome researchers on the microbiota of milks and framed insights for assessing, communicating, and managing risks and benefits. Learn results from social media promotion of an event to attract remote viewers and new members. The panelists will address common and unique questions and concerns from their audiences. The audience at SRA will engage in dialogue with panelists about applying new evidence to update current communications and policies. A future phase of this joint RO project will engage SRA risk practitioners and stakeholders from both pro- and anti-pasteurization positions in an international workshop to map scientific evidence for risks AND benefits for milks and bring the emotionality of so many communications about raw milk risks, and denial of benefits, into alignment with 21st century science.

RO Partners & Panelists:

Lee Baily
Peg Coleman
Steve Corin
Scott Ferson
Julie C. Lemay

Sponsored by:
Risk Communication SG

10:30 AM – 12:00 PM

Galerie 2, 2nd Floor

T2-B Symposium: Foundational Issues in Risk Analysis II – Time Dynamics and Multigenerational Issues

Chair: Roger Flage

10:30 AM T2-B.1

A Probabilistic Network Flow Approach to the Risk Analysis of Interdependent Infrastructure Systems under Uncertainty

Yu J, Baroud H
Vanderbilt University

10:50 AM T2-B.2

Evolution of Heat Wave Vulnerability - the Influence of Individual Behavior and Social Networks

Zhai C, Guikema SD*, Anderson GB, Lin G, Fu Z, Igusa T
University of Michigan

11:10 AM T2-B.3

Strategic Use of Time in Adversarial Risk Management

Heon GD, Paté-Cornell ME
Stanford University

11:30 AM T2-B.4

Cancer Risk from Generation to Generation: Impact of Maternal Dietary Toxin Exposure on Infant DNA Damage

Saha Turna N, Liverpool-Tasie S, Wu F
Michigan State University

Sponsored by:
Foundational Issues in Risk Analysis SG

10:30 AM – 12:00 PM

Galerie 3, 2nd Floor

T2-C Symposium: Risk and Precision Medicine

Chair: Gary Marchant

10:30 AM T2-C.1

Genomic Medicine and Malpractice Risks

Marchant GE, Lindor RA
Arizona State University

10:50 AM T2-C.2

Evaluating Intersections Between Precision Medicine, Risk, and Real World Data in the Context of Rapidly Lethal Diseases

Hartley K
LSP Group LLC

11:10 AM T2-C.3

Trust in Precision Medicine

Florin MV
EPFL International Risk Governance Center (IRGC)

11:30 AM T2-C.4

Regulating Nutrition IoT

Williams RA
Utah State

Sponsored by:
Risk, Policy and Law SG

10:30 AM – 12:00 PM

Galerie 4, 2nd Floor

T2-D Roundtable: Diversity in the Risk Analysis Profession

Co-chairs: Katherine McComas, Amina Wilkins

This roundtable seeks to stimulate a robust discussion around the importance of diversity in the risk analysis profession. The overarching intent is to examine how SRA can support and grow the diversity of the profession, particularly among graduate students and young professionals. Topics include what is meant by diversity and why diversity is important to all facets of risk analysis. Roundtable organizers will offer a summary of research examining diversity in STEM fields, more generally, and offer some data on the current diversity of SRA's membership. Through audience participation, we seek to generate examples of what other professional and scientific organizations have done to increase diversity in their membership and consider what role SRA may play in promoting diversity in the risk analysis profession.

10:30 AM – 11:30 AM

Galerie 5, 2nd Floor

T2-E Infrastructure Risk Management

Chair: Patricia Larkin

10:30 AM T2-E.1

Identifying California's Transportation Fuel Sector as a Critical Infrastructure Network

Lindbergh S, Schmidt-Poolman M, Radke J, He Y, Ju Y
University of California at Berkeley

10:50 AM T2-E.3

Risk-Based Adaptive Health Monitoring of Corroded Pipelines

Aria AA
University of Maryland

11:10 AM T2-E.4

Disaster v. Corrosion: Managing Competing Risks Facing Municipal Gas Infrastructure

Scott RP, Scott TA
Colorado State University

Sponsored by:
Applied Risk Management SG

10:30 AM – 12:00 PM

Galerie 6, 2nd Floor

T2-F Symposium: Geoenvironmental Risks, Decisions, and Governance, Part I

Chair: Jonathan Wiener

10:30 AM T2-F.1

Solar Geoenvironmental and Learning
Kelly D, Heutel G, Moreno-Cruz J, Shayegh S, Georgia Institute of Technology*

10:50 AM T2-F.2

Governance Frameworks for Solar Geoenvironmental Research: Securing Social License by Addressing both Direct and Indirect Risks
Parson EA, UCLA School of Law

11:10 AM T2-F.3

Governance Strategies for Emerging Risks of Solar Radiation Management
Grieger KD, Felgenhauer T, Renn O, Wiener J, Borsuk M, RTI International, Institute for Advanced Sustainability Studies, Duke University

11:30 AM T2-F.4

Risk Trade-offs Between Climate Change, Mitigation, and Solar Radiation Management
Felgenhauer T, Borsuk M, Wiener J, Duke University

Sponsored by:
Decision Analysis and Risk SG

10:30 AM – 12:00 PM

Mardi Gras Ballroom D, 3rd Floor

T2-H Roundtable: EPA Transparency in Science and Economics

Chair: Lisa Robinson

In April 2018, the U.S. Environmental Protection Agency (EPA) issued a notice of proposed rulemaking entitled “Strengthening Transparency in Regulatory Science.” In June, the Agency then announced that it was considering whether to propose a second rule on “Increasing Consistency and Transparency in Considering Costs and Benefits in the Rulemaking Process.” The titles of each initiative suggest worthy goals, but they have been controversial. One set of concerns relates to the political motivations, given the current Administration’s interest in rolling-back environmental regulations. A second set of concerns relates to the substantive details of each proposal, which raise several complicated and difficult questions.

In this roundtable, we will focus on this latter set of more substantive concerns, bringing together a cross-disciplinary group of experts to discuss the details and implications of the proposals from a variety of perspectives. We will provide an overview of each proposal, comment on the issues raised and on how to best address them, then open the discussion to the audience.

Sponsored by:
Economics and Benefits Analysis SG & The Society for Benefit Cost Analysis (SBCA)

For more information on each proposal, see

Science: www.regulations.gov/docket?D=EPA-HQ-OA-2018-0259

Benefit-cost analysis: www.regulations.gov/docket?D=EPA-HQ-OA-2018-0107

Panelists:

Lisa A. Robinson, Senior Research Scientist, Center for Health Decision Science and Center for Risk Analysis, Harvard T.H. Chan School of Public Health

Shaun Goho, Deputy Director, Emmett Environmental Law and Policy Clinic, Harvard Law School

Anthony (Tony) Cox, Clinical Professor, University of Colorado, and President, Cox Associates; Editor-in-chief, Risk Analysis, and Chair, EPA Clean Air Scientific Advisory Committee

George Gray, Professor, Milken Institute School of Public Health, George Washington University; former Assistant Administrator, EPA Office of Research and Development and EPA Science Advisor

Clark Nardinelli, former Chief Economist, U.S. Food and Drug Administration

10:30 AM – 12:00 PM

Mardi Gras Ballroom E, 3rd Floor

T2-I Symposium: Risk Analysis Applications for Strategic Planning and Resource Management at the U.S. Department of Homeland Security

Chair: Henry Willis

10:30 AM T2-I.1

Developing a Risk Assessment Methodology to Support Homeland Security Strategic Planning
Willis HH, RAND Corporation

10:50 AM T2-I.2

Integration of Risk Assessments into Strategy, Planning, and Resource Allocation
Evenhaugen S, Department of Homeland Security

11:10 AM T2-I.3

Understanding Systemic Risk Beyond the Financial Services Sector
Hanson R, Department of Homeland Security

11:30 AM T2-I.4

Developing and Using a Homeland Security Mission Risk Register
Stevens S, Department of Homeland Security

Sponsored by:
Security & Defense SG

10:30 AM – 12:00 PM

Mardi Gras Ballroom FGH, 3rd Floor

T2-J Globalization and the Kaleidoscope of Risk for Complex Socio-Economic Systems

Chair: Vanessa Schweizer

10:30 AM T2-J.1

International Development and Climate Risk
Schweizer VJ, University of Waterloo

10:50 AM T2-J.2

Australia’s Risk Assessment Adaptation Strategy
Martin PWA, Ross BL, Australian National University

11:10 AM T2-J.3

Managing the Risks of Modern Slavery in UK Supply Chains: A Delphi Study of Expert Perceptions and Priorities
Wagner H, Wardman JK, Gutierrez Huerter GO, Trautrim A, Gold S, University of Nottingham, Kings College London, University of Kassel*

11:30 AM T2-J.4

Unbalanced Regional Developments and the Disparity of Risk Perceptions of Air Pollution in China
Fan SW, Xu JH, Central University of Finance and Economics, Peking University

1:30 PM – 3:00 PM

Galerie 1, 2nd Floor

T3-A Roundtable: Today's Boost for Resilience — Does it Conflict with the Risk Field?

Chair: Marja Ylönen

Over the last two decades, the resilience field has developed strongly – resilience thinking has become ubiquitous and is now broadly recognized in different application areas. Today, for example, resilience thinking is commonly used in policy documents related to disaster management. In fact, many organizations, scholars and leaders, such as the former Secretary-General of the United Nations, Ban Ki-moon, have even called for a shift from risk to resilience.

This boost for resilience raises some interesting questions in relation to the risk field: does it conflict with the knowledge and guidance provided by this field? Does resilience analysis and management challenge the current ideas, principles and methods concerning prudent risk analysis? Can we speak about a distinctive resilience field and science in parallel to risk analysis, or should we think about risk analysis as the overriding concept and field, and resilience as a key supporting pillar for this field? Current risk management and governance frameworks do consider resilience as a key strategy for handling risk, but we still see risk perspectives and practices which give rather limited weight to resilience-based thinking.

The roundtable gathers scholars in the fields of risk and resilience to discuss these issues. We seek to enhance the understanding of what the current knowledge of risk and resilience analysis and management is and what the interrelationships between these fields are. We also aim to stimulate a discussion on how to further develop the interactions between the fields and, in particular, how we can obtain improved collaboration between professionals belonging to the different 'schools'.

Participants:

Terje Aven
James Lambert
Igor Linkov
Myriam Merad

Sponsored by:

Resilience Analysis SG

1:30 PM – 3:00 PM

Galerie 2, 2nd Floor

T3-B Symposium: Foundational Issues in Risk Analysis III — From Data to Systemic Hazards

Chair: Seth Guikema

1:30 PM T3-B.1

Big Data and Data-driven Prediction Modeling in the Context of an Uncertainty Based Risk Description Conceptualization

Olsen K, Flage R, Guikema SD
University of Stavanger

1:50 PM T3-B.2

Rethinking Analytics for Risk and Resilience

Alderson DL, Eisenberg DA*, Seager TP
Naval Postgraduate School

2:10 PM T3-B.3

Extracting and Integrating Real-time Societal Intelligence for Epidemic Management

Grottenberg L, Njå O, Tøssebro E, Braut GS
University of Stavanger

2:30 PM T3-B.4

Machine-learned Bayesian Networks in Human Health Risk Assessment

MacDonald Gibson J
University of North Carolina at Chapel Hill

Sponsored by:

Foundational Issues in Risk Analysis SG

1:30 PM – 2:30 PM

Galerie 3, 2nd Floor

T3-C Societal Issues and Risk

Chair: Robin Cantor

1:30 PM T3-C.1

The Economic Origins of the Opioid Crisis

Cantor RA, Bates HI, Mackoul CV
Berkeley Research Group LLC

1:50 PM T3-C.3

Next Chemical Risk Management Target Aiming after the WSSD 2020 Goal

Tokai A, Kojima N, Xue M, Zhou L, Machimura T
Osaka University

2:10 PM T3-C.4

Bacterial Reverse Mutation Assay (Ames Test): Time to Revise OECD Test Guideline 471?

Schoeny R, Cross KP, DeMarini DM, Elespuru R, Hakura A, Levy D, Williams R, Zeiger E
Rita Schoeny, LLC, Leadscope, U.S. EPA, U.S. FDA, Eisai, Japan, Lhasa, LTD, Errol Zeiger Consulting

Sponsored by:

Risk Policy and Law SG

1:30 PM – 2:30 PM

Galerie 4, 2nd Floor

T3-D Symposium: Modeling of Infrastructure and Community Resilience

Chair: Hiba Baroud

1:30 PM T3-D.1

The Role of Protocol Layers and Macro-Cognitive Functions in Engineered System Resilience

Amodeo D, Francis R
George Washington University

1:50 PM T3-D.2

Temporary Housing after Natural Disasters: Minimizing Financial Risk and Maximizing Community Resilience

Perrucci D, Baroud H
Vanderbilt University

2:10 PM T3-D.4

A Value-Focused Thinking Approach to Assessing Community Resilience

Suresh R, MacKenzie CA
Iowa State University

Sponsored by:

Engineering and Infrastructure SG

1:30 PM – 2:30 PM

Galerie 5, 2nd Floor

T3-E Symposium: ENAVI: The German Energy Transition Navigated

Chair: Piet Sellke

1:30 PM T3-E.1

Overview on the Kopernikus Project: Philosophy, Structure, Organization

Thomas H
Institute for Advanced Sustainability Studies (IASS)

1:50 PM T3-E.3

The Policy Package Approach: A New Perspective for Managing the (German) Energy Transition?

Scheer D, Nabitz L
Karlsruhe Institute of Technology (KIT)

2:10 PM T3-E.4

Transdisciplinary Discourse Tools to Promote Interaction between Science, Economy and Society

Sellke, Piet PS
IASS Potsdam

Sponsored by:

Applied Risk Management SG

1:30 PM – 2:30 PM	1:30 PM – 3:00 PM	1:30 PM – 3:00 PM	1:30 PM – 2:30 PM	1:30 PM – 2:30 PM
<i>Galerie 6, 2nd Floor</i>	<i>Mardi Gras Ballroom ABC, 3rd Floor</i>	<i>Mardi Gras Ballroom D, 3rd Floor</i>	<i>Mardi Gras Ballroom E, 3rd Floor</i>	<i>Mardi Gras Ballroom FGH, 3rd Floor</i>
T3-F Symposium: Geoenvironmental Risks, Decisions, and Governance, Part II	T3-G Dietary and Drinking Water Exposures	T3-H Economics of Food Risk-Benefit Analysis	T3-I Modeling & Simulation for Security, Safety and Risk Monitoring	T3-J From AI to Fake News: Media & Emerging Risks
<i>Chair: Mark Borsuk</i>	<i>Chair: Amina Wilkins</i>	<i>Chair: Aliya Sassi</i>	<i>Chair: Ramin Moradi</i>	<i>Chair: Sharon Friedman</i>
1:30 PM	1:30 PM	1:30 PM	1:30 PM	1:30 PM
T3-F.1	T3-G.1	T3-H.1	T3-I.1	T3-J.2
Risk Sharing Agreements and Geo-engineering Governance <i>Mallampalli VR, Felgenhauer T, Borsuk M Pratt School of Engineering</i>	A Systematic Review on Bioaccessibility of Arsenic in Rice <i>Zhou Z, Shao K Indiana University</i>	Targeting and Evaluating Investments in Food Safety in Low and Middle Income Countries <i>Hoffmann S, Muhammad A, Meade B USDA Economic Research Service</i>	Methodology for System-level Risk Monitoring Using Simulated and Sensor Data <i>Moradi RM, Groth KMG SyRRA Lab, Center for Risk & Reliability, University of Maryland, College Park</i>	Gradients of Fear and Anger in the Social Media Response to Terrorism <i>Baucum MP, John RS* University of Southern California</i>
1:50 PM	1:50 PM	1:50 PM	1:50 PM	1:50 PM
T3-F.2	T3-G.2	T3-H.2	T3-I.2	T3-J.3
Geo-Wedges: A Portfolio Approach to Geoenvironmental the Climate <i>Ricke KL, Moreno-Cruz JB University of California - San Diego</i>	Estimating Water Age and its Effects on Water Quality in a Full-Scale Green Home <i>Julien R, Mitchell J Michigan State University</i>	The Impact of Food Safety Outbreaks on Produce Supply, Imports, and Exports <i>Astill GA, Minor T Economic Research Service, US Department of Agriculture</i>	CFD Study of the Dispersion and Combustion of a Gas Mixture in the 20L Sphere <i>Serrano JDJ, Pico PD, Torrado DE, Murillo CH, Muñoz F, Dufaud O Universidad De Los Andes, Universite De Lorraine</i>	Structured Introspection: Can a Simple Intervention Help People Identify Fake News about Climate Change on Facebook? <i>Lutzke L, Drummond C, Slovic P, Árvai J University of Michigan, Decision Research</i>
2:10 PM	2:10 PM	2:10 PM	2:10 PM	2:10 PM
T3-F.4	T3-G.3	T3-H.3	T3-I.3	T3-J.4
Modeling Disruptive and Dynamic Futures to Assess and Manage Project Risks <i>Collier ZA, Lambert JH University of Virginia</i>	Risk Assessment of Benzo[a]pyrene in Heat-processed Meat in Denmark: A Probabilistic Approach <i>Georgiadis S, Jakobsen LS, Nielsen BF, Nauta MJ, Pires SM Technical University of Denmark</i>	A Retrospective Analysis of the U.S. Food and Drug Administration's Seafood HACCP Rule and Program <i>Sassi A, Marasteanu J FDA</i>	A Probabilistic Analysis of Nuclear Deterrence Failure <i>Reinhardt JC, Paté-Cornell ME Stanford University</i>	The Effects of Media Coverage of Scientific Retractions on Trust in Science <i>Sarathchandra D, McCright AM University of Idaho</i>
Sponsored by: <i>Emerging Nanoscale Materials SG</i>	Sponsored by: <i>Exposure Assessment SG</i>	Sponsored by: <i>Economics and Benefits Analysis SG & The Society for Benefit Cost Analysis (SBCA)</i>	Sponsored by: <i>Security & Defense SG</i>	Sponsored by: <i>Risk Communication SG</i>

3:30 PM – 5:10 PM

Galerie 1, 2nd Floor

T4-A Symposium: Development of Metrics to Assess Critical Infrastructure Resilience

Chair: Frederic Petit

3:30 PM T4-A.1
A Decision Analytic Approach to Electric Infrastructure Resilience

Kavicky JA, Petit FD
Argonne National Laboratory

3:50 PM T4-A.2
Assessing Resilience of Critical Infrastructures Exposed to Multiple Threats and Optimizing Related Investments

Jovanovic AS
EU-VRI/Steinbeis

4:10 PM T4-A.3
Integrating Indicators of Physical, Social, and Economic Systems for the Measurement of Community Resilience

Dillard MK
National Institute of Standards and Technology

4:30 PM T4-A.4
Use of Community-focused Resilience Metrics to Evaluate Alternative Investments in Electric Grid Infrastructure

Jeffers RF, DeRosa S
Sandia National Laboratories

4:50 PM T4-A.5
Standardizing an Approach to Community Resilience Planning

Harrison K
NIST

Sponsored by:
Resilience Analysis SG

3:30 PM – 5:00 PM

Galerie 2, 2nd Floor

T4-B Roundtable: Risk Analysis vs Safety Management: Two Ships Passing in the Night? - How Closely Integrated Could and Should these two Approaches be for Improving the Joint Management of Safety and Risk?

Chair: Kenneth Pettersen Gould

Risk analysis vs safety management: two ships passing in the night? - How closely integrated could and should these two approaches be for improving the joint management of safety and risk? Historically the focus on quantitative risk assessments (QRA) and probabilistic risk assessments (PRAs) have had and still have the major role in risk management. QRAs and PRAs are rooted in engineering and natural sciences, and the quantitative methods used are attractive for supporting decision-making on the design and management of technical systems. At the same time, industry associations and regulatory organizations are paying a great deal of attention to the analysis and normative prescriptions of safety management systems (SMS) in technical organizations. SMS approaches have been guided by accident literature as well as by high reliability organizations research. While SMS "guidelines" call for risk assessments as part of the SMS strategy, attention is also paid to management practices, incentives, safety culture and organizational resilience as key elements. These organizational, perceptual and attitudinal variables are not physical in nature and have not been subject to as extensive a quantitative analysis as the physical variables typically attended to in risk analysis. In fact, very few organizational and managerial variables have found their way into formal risk assessments. Nor does the safety management literature provide much reference to risk analysis.

In important respects, risk management and safety management are different. Safety is about assurance; risk is about loss. Safety is in many respects a perceptual property, risk is a calculated one. The aim of this roundtable is to assess the potential for integrating risk analysis and safety management. Is it possible, or desirable to integrate safety and risk management? What are the analytic and methodological challenges to integrating research in both fields? What are the possibilities of integrating the two perspective and methods in management practice? How can we move forward with a dialogue between different definitions and practices?

Participants:
Kenneth A Pettersen Gould, University of Stavanger
Terje Aven, University of Stavanger
Rob Goble, Clark University
Jean Christophe Le Coze, INERIS
Paul Schulman, CCRM UC Berkeley

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Foundational Issues in Risk Analysis SG

3:30 PM – 5:00 PM

Galerie 3, 2nd Floor

T4-C Symposium: Decision-Making Algorithms: Governing Risks and Opportunities

Chair: Marie-Valentine Florin

3:30 PM T4-C.1
Algorithms: Risk, Trust & Acceptance

Stevens Y
Arizona State University

3:50 PM T4-C.2
Risks and Liabilities of Autonomous Systems

Marchant GE
Arizona State University

4:10 PM T4-C.3
The IRGC Project on Decision-Making Algorithms: Governing Risks and Opportunities

Bejtullahu K
Ecole Polytechnique Fédérale de Lausanne (EPFL) International Risk Governance Center (IRGC)

4:30 PM T4-C.4
Can Big Data Improve Risk Regulation? An International Comparative Analysis of the Healthcare Sector

Balog-Way DHP
King's College London

Sponsored by:
Risk Policy and Law SG

3:30 PM – 5:10 PM

Galerie 4, 2nd Floor

T4-D Symposium: Predictive Risk Modeling for Resilient Infrastructure Systems

Chair: Benjamin Rachunok

3:30 PM T4-D.1
What Does the Future Hold? A Multivariate Analysis of the Residential Water-Energy Demand Nexus under Climate Change

Obringer R, Nateghi R
Purdue University

3:50 PM T4-D.2
Electricity Demand Analytics Under Climate Variability and Change

Maia Silva D, Kumar R, Nateghi R
Purdue University

4:10 PM T4-D.3
A Comparative Analysis of Climate Sensitivities of High- and Moderate-Intensity Regional Electricity Demands

Mukherjee S, CR V, Nateghi R
University at Buffalo

4:30 PM T4-D.4
Multi-Dimensional Infrastructure Resilience Modeling: A Data-driven Approach

Nateghi R
Purdue University

4:50 PM T4-D.5
A Comparison Of Spatial And Random Failures When Simulating Network Outages

Rachunok BA, Nateghi R
Purdue University

Sponsored by:
Engineering and Infrastructure SG

3:30 PM – 5:10 PM

Galerie 5, 2nd Floor

T4-E Risk Governance and Risk Management in Complex Systems

Chair: Kristin Schell

3:30 PM T4-E.1
Risk Governance in Medical Physics

Schell KR, Schell MC, Abdulla A
Polytechnique Montreal, University of Rochester, University of California San Diego

3:50 PM T4-E.2
The Value of Corporate Risk in the Presence of Background Risk Interactions: An Application for Practice

Scordis N, Hofmann A
St John's Unviersity

4:10 PM T4-E.3
A Risk Management Framework for Reducing the Complex Risks Associated with the Nuclear Fuel Cycle

Williams A, Caskey S
Sandia National Laboratories

4:30 PM T4-E.4
Development of a Risk Management Strategy for Prioritizing Response Actions at Abandoned Mine Sites

Ackerlund WS
Ecology and Environment, Inc.

4:50 PM T4-E.5
Logistics Schedule Risk Analysis Using Optimization, Simulation, and Similarity Metrics

Thorisson H, Lambert JH
University of Virginia

Sponsored by:
Applied Risk Management SG

3:30 PM – 5:10 PM	3:30 PM – 5:10 PM	3:30 PM – 5:00 PM	3:30 PM – 5:10 PM	3:30 PM – 5:00 PM
<p><i>Galerie 6, 2nd Floor</i></p> <p>T4-F Symposium: Department of Defense Efforts to Advance the Risk Assessment of Nanomaterials <i>Chair: Jo Anne Shatkin</i></p>	<p><i>Mardi Gras Ballroom ABC, 3rd Floor</i></p> <p>T4-G Symposium: The Many Faces of Emerging and Legacy Contaminants: Collecting, Interpreting, and Acting on Water Data <i>Chair: Christopher Greene</i></p>	<p><i>Mardi Gras Ballroom D, 3rd Floor</i></p> <p>T4-H Application of QMRA: From Evaluating Potential Interventions to Risk-Benefit Analysis <i>Chair: Amir Mokhtari</i></p>	<p><i>Mardi Gras Ballroom E, 3rd Floor</i></p> <p>T4-I Symposium: Risk Transfer and Global Workplace Health <i>Chair: Mary O'Reilly</i></p>	<p><i>Mardi Gras Ballroom FGH, 3rd Floor</i></p> <p>T4-J Trust and Public Participation <i>Chair: Laura Rickard</i></p>
<p>3:30 PM T4-F.1</p> <p>Single Visit Nanocoatings System for Offshore & Marine Corrosion Protection <i>Hawkins T, Virtanen J, Tesla Nanocoatings</i></p>	<p>3:30 PM T4-G.1</p> <p>USGS Collaborative Science with the Drinking Water and Public Health Communities <i>Toccalino PL, Bradley P, Kolpin D, Ayotte J, Argos M, Gribble M, Weis C, Focazio M* U.S. Geological Survey</i></p>	<p>3:30 PM T4-H.1</p> <p>A Quantitative Microbial Risk Assessment of Campylobacteriosis through Consumption of Broilers and Evaluation of Processing Interventions <i>Dogan OB, Wang B, University of Nebraska-Lincoln</i></p>	<p>3:30 PM T4-I.1</p> <p>Risk Transference in Nail Salons <i>Tien AJ, Workplace Health Without Borders-US</i></p>	<p>3:30 PM T4-J.1</p> <p>Distrust in UK Energy Companies and the Risk it Poses to Engaging People with Energy Transitions <i>Demski C, Becker S, Evensen D, Pidgeon NF, Cardiff University</i></p>
<p>3:50 PM T4-F.2</p> <p>Application of the DOD Framework for Examining Possible Health and Environmental Impacts Of Nanomaterials for Use in Weapon Systems <i>Underwood PM, Rak A*, Department of Defense and Noblis Inc.</i></p>	<p>3:50 PM T4-G.2</p> <p>Hormones and Pharmaceuticals in Groundwater Used as a Source of Drinking Water Across the United States <i>Bexfield LM, Toccalino PL, Belitz K, Foreman WT, Furlong ET, U.S. Geological Survey</i></p>	<p>3:50 PM T4-H.2</p> <p>Assessing the Canadian Public Health Impact of Campylobacter spp. in Broilers <i>Otten A, Ernst N, Ng V, Smith B, Fazil A, Public Health Agency of Canada</i></p>	<p>3:50 PM T4-I.2</p> <p>Transferred Risk in the Garment Industry and the Changing Role of Consumers <i>O'Reilly M, State University of New York, Workplace Health Without Borders-US</i></p>	<p>3:50 PM T4-J.2</p> <p>Exploring Indigenous Research Methods and Methodologies for Understanding and Communicating Health Risks <i>Jardine CG, Lines LA, University of the Fraser Valley</i></p>
<p>4:10 PM T4-F.3</p> <p>Lessons Learned from Case Studies Demonstrating a DoD Framework to Evaluate Health and Environmental Impacts of Nanomaterials <i>Ede J, Shatkin JA, Vireo Advisors</i></p>	<p>4:10 PM T4-G.3</p> <p>State-Level Applications of Emerging Contaminant Data to Public Health Risks <i>Greene CW, Minnesota Department of Health</i></p>	<p>4:10 PM T4-H.3</p> <p>A Quantitative Risk Assessment Model for Salmonella in Yellow Broiler Supply Chain in China: Evaluating the Effects of Antimicrobial Agents in Chilling Process Water <i>Xiao X, Wang W, Zhang J, Liao M, Yang H, Chase RW, John K, Li Y, Zhejiang University, Zhejiang Academy of Agricultural Sciences, South China Agricultural University, University of Arkansas</i></p>	<p>4:10 PM T4-I.3</p> <p>Evaluating Transferred Risk in the Global Marketplace <i>Boelter F, RHP Risk Management Inc.</i></p>	<p>4:10 PM T4-J.3</p> <p>Public Perception of Risks and Benefits of Low Materials Futures <i>Pidgeon NF, Cherry CE, Steentjes K, Cardiff University</i></p>
<p>4:30 PM T4-F.4</p> <p>Life Cycle Hotspot Assessment of an Anti-corrosion Nanomaterial Coating <i>Ong KJ, Henderson A, Rak A, Shatkin JA, Vireo Advisors, LLC</i></p>	<p>4:30 PM T4-G.4</p> <p>Persistent VOC Contamination of Public Drinking Water Supplies in California <i>Williams PRD, E Risk Sciences, LLP</i></p>	<p>4:30 PM T4-H.4</p> <p>A Farm-to-fork Quantitative Risk Assessment Model for Antimicrobial-resistant Salmonella Heidelberg in Canadian Broiler Chickens <i>Collineau L, Agunos A, Carson C, Chapman B, Fazil A, Otten A, Parmley J, Reid-Smith RJ, Smith B*, Public Health Risk Sciences Division, Public Health Agency of Canada</i></p>	<p>4:30 PM T4-I.4</p> <p>Global Risk Transfer Via Informal Electronic Waste Recycling <i>Neitzel RL, Saylor SK, University of Michigan School of Public Health</i></p>	<p>4:30 PM T4-J.4</p> <p>When Trust is Durable and Impactful: The Role of Attitude Strength in Conceptualizing Trust <i>Song H, Cornell University</i></p>
<p>4:50 PM T4-F.5</p> <p>Application and Testing of Risk Screening Tools for Nanomaterial Risk Analysis <i>Grieger KD, Bossa N, Felicitas von Borries KJ, Strader P, Cuchiara M, Hendren CO, Hansen SF, Jones J, RTI International, Duke University, Technical University of Denmark, North Carolina State University</i></p>	<p>4:50 PM T4-G.5</p> <p>Method Development for Determination of Codeine, Fluoxetine and Acetaminophen in Brandywine Creek Watershed <i>Sunger N, Pistos C, Anderson C, Lambon J, Terlecky D, West Chester University</i></p>	<p>Sponsored by: <i>Microbial Risk Analysis SG</i></p>	<p>4:50 PM T4-I.5</p> <p>A Management System Approach to Risk within the Temporary Staffing Industry <i>Deist RP, Chartwell Staffing Solutions</i></p>	<p>Sponsored by: <i>Risk Communication SG</i></p>
<p>Sponsored by: <i>Emerging Nanoscale Materials SG</i></p>	<p>Sponsored by: <i>Exposure Assessment SG</i></p>		<p>Sponsored by: <i>Occupational Health and Safety SG</i></p>	

8:30 AM – 9:30 AM	8:30 AM – 9:30 AM	8:30 AM – 9:30 AM	8:30 AM – 10:00 AM	8:30 AM – 10:00 AM
<p><i>Galerie 1, 2nd Floor</i></p> <p>W1-A Symposium: Risk, Resilience, and Decision Making: Integrating Resilience into Risk Analysis and Adaptation Planning, Part I</p> <p><i>Chair: Christian Beaudrie</i></p>	<p><i>Galerie 2, 2nd Floor</i></p> <p>W1-B Symposium: Foundational Issues in Risk Analysis IV</p> <p><i>Chair: Terje Aven</i></p>	<p><i>Galerie 3, 2nd Floor</i></p> <p>W1-C Exposure and Disaster Decision-Making</p> <p><i>Chair: Hank Jenkins-Smith</i></p>	<p><i>Galerie 4, 2nd Floor</i></p> <p>W1-D Symposium: Operationalization of Critical Infrastructure interdependencies assessments</p> <p><i>Chair: Frederic Petit</i></p>	<p><i>Galerie 5, 2nd Floor</i></p> <p>W1-E Roundtable: Risk Analysis and Management in Finance</p> <p><i>Chair: Don Chance</i></p>
<p>8:30 AM W1-A.2</p> <p>Tracking Resilience to Climate Change in Agriculture: An Indicator Set from Regional Policy-makers' Perspective</p> <p><i>Bizikova L, Waldick R, Larkin P* University of Ottawa</i></p>	<p>8:30 AM W1-B.2</p> <p>Coping with Globalization. Risk Regulation in High-Risk industries</p> <p><i>Engen OAE University of Stavanger</i></p>	<p>8:30 AM W1-C.2</p> <p>Considering Risk in Radiological Evacuation and Reoccupation Decision Making</p> <p><i>Bralely GS, Johnson TE Colorado State University</i></p>	<p>8:30 AM W1-D.1</p> <p>Institutional Fragmentation and Critical Infrastructure Systems: How Network Structure Impacts Performance, Resilience, and Equity.</p> <p><i>Scott TA, Scott RP, Greer RA University of California, Davis, Colorado State University, Texas A&M University</i></p>	<p>In keeping with the conference theme, "The Many Faces of Risk," this session focuses on the little-known and often-misunderstood practice of financial risk management. Financial risk management evolved out of the field of financial economics, which is the study of the economics of financial decisions. What occurs in the financial world affects every human being, through the capital raised by companies to the values of the savings and retirement portfolios of workers. Likewise, movements in exchange rates and capital flows between countries affect the competition between domestic and foreign firms that propels the global economy. Yet, for most individuals little is known about financial risk management, and what is believed to be known is often incorrect. Many people think that the industry is a lawless wild west with everyone gambling, and a small number of visionaries that know where markets are heading. The field of financial economics reveals that this impression is far from the truth. Borrowing from the vast body of quantitative theory in economics, finance has evolved into a discipline almost entirely focused on risk analysis and management. The origins of modern finance derive from the mean-variance portfolio models of Markowitz and Sharpe. With the development of derivative pricing theory in the early 1970s, quantitative models in finance began a sharp ascent to the summit of the academic and practitioner worlds and led to the awarding of several Nobel Prizes. Unfortunately, the misapplication of the models has contributed to financial stresses. Understanding what finance has contributed to risk analysis is an important step in gaining a comprehensive understanding of the subject of risk. This roundtable provides an overview of the development of risk models in portfolio analysis and derivative pricing and concludes with an application that demonstrates how finance is revolutionizing the energy industry.</p>
<p>8:50 AM W1-A.3</p> <p>Resilience: Towards Unified Theory and Practice</p> <p><i>Linkov I US Army Engineer Research and Development Center</i></p>	<p>8:50 AM W1-B.3</p> <p>The Good, the Bad and the Ugly: An Empirical Assessment and Comparison of Three Competing Models for Explaining the Acceptance of Technologies</p> <p><i>Elgueta H Universidad de Magallanes</i></p>	<p>8:50 AM W1-C.3</p> <p>Risk Communication and Siting Hazardous Facilities: Understanding Local Support and Why it Matters</p> <p><i>Gupta K, Jenkins-Smith HC, Ripberger J, Silva CL University of Oklahoma</i></p>	<p>8:50 AM W1-D.2</p> <p>Infrastructure Interdependency Assessment Toolset to Inform Recovery Investment</p> <p><i>Lewis LP, Burdi CA, Schlueter SQ, Wagner AM, Bergerson JD, Petit FD Argonne National Laboratory</i></p>	<p>Participants: Robert Brooks, Ph.D., CFA Sharon Brown-Hruska, Ph.D.</p>
<p>9:10 AM W1-A.4</p> <p>Interdisciplinary Research Contributions to Modeling Decision Making for Resilience</p> <p><i>Dillon-Merrill RL National Science Foundation</i></p>	<p>9:10 AM W1-B.4</p> <p>The Human Side of Systemic Risks</p> <p><i>Goble R Clark University</i></p>	<p>9:10 AM W1-C.4</p> <p>The Ghosts of Our Radiant Past: Institutional Path Dependencies in Radiological Risk Assessments and Communication</p> <p><i>Lindberg J King's College London</i></p>	<p>9:10 AM W1-D.3</p> <p>A New Generation of Decision Support System for the Risk Analysis and Forecast of Critical Infrastructure</p> <p><i>Rosato V, Pollino M, Di Pietro A, Tofani A, Giovinazzi S ENEA, Italian National Agency for New Technologies, Energy and Sustainable Economic Development</i></p>	<p>Sponsored by: <i>Foundational Issues in Risk Analysis SG</i></p>
<p>Sponsored by: <i>Resilience Analysis SG</i></p>	<p>Sponsored by: <i>Risk Policy and Law SG</i></p>	<p>Sponsored by: <i>Engineering and Infrastructure SG</i></p>	<p>9:30 AM W1-D.4</p> <p>Analysis of Service Level Interdependencies between Critical Infrastructures under Dynamic Conditions and Disruptive Events</p> <p><i>Giannopoulos G, Galbusera L* European Commission, Joint Research Centre, Directorate E – Space, Security and Migration, Technology Innovation in Security Unit</i></p>	<p>Sponsored by: <i>Applied Risk Management SG</i></p>

8:30 AM – 10:10 AM

Galerie 6, 2nd Floor

W1-F Symposium: Risk Analysis for Uncertain Futures

Chair: Daniel Pérez

8:30 AM W1-F.1

Risk Analysis for Uncertain Futures
Dudley SE, Carrigan C, Mannix B, Pérez DR
The George Washington University

8:50 AM W1-F.2

Managing Large-Scale Uncertain Risks via Muddling-Through and Deep Learning
Cox T
Cox Associates

9:10 AM W1-F.3

Combined Cyber and Physical Attacks on the Maritime Transportation System
Roberts FS
Rutgers University

9:30 AM W1-F.4

Anticipating the Unanticipated-Unintended Consequences
Tonn B, Stiefel D
ThreeCubed, University of Tennessee/
Thrivner

9:50 AM W1-F.5

Responsible Precautions for Uncertain Environmental Risks
Viscusi WK
Vanderbilt University

Sponsored by:
Decision Analysis and Risk SG

8:30 AM – 10:00 AM

Mardi Gras Ballroom ABC, 3rd Floor

W1-G Ecosystem Services and Management

Co-chairs: Amanda Bailey,
Gregory Kiker

8:30 AM W1-G.1

Multi-Criteria Decision Analysis in the Kruger National Park (South Africa): Assessing Potential Trade-offs in Elephant Population and Vegetation Impacts under Varying Climate Scenarios

Ramey C, Kiker G
University of Florida

8:50 AM W1-G.2

How Many Elephants are Too Many? How Much Impact is Too Much? Using Simulation Models to Compare Risks from Climate, Elephants and Bush Encroachment in the Kruger National Park (South Africa)

Kiker GA, Fullman TJ, Bunting EL
University of Florida, The Wilderness Society, Michigan State University

9:10 AM W1-G.3

Novel Approach for Considering Ecosystem Services at Industrial Sites Near Agricultural Lands

9:30 AM W1-G.4

Citizen Science Opportunities to Support Environmental Characterization and Impact Assessments

Sponsored by:
Ecological Risk Assessment SG

8:30 AM – 9:30 AM

Mardi Gras Ballroom D, 3rd Floor

W1-H Presence and Survival of Microbial Pathogens in Environment and Supply Chain

Chair: Jade Mitchell

8:30 AM W1-H.2

Effects of Water Chemistry on Infectivity of Legionella Pneumophila
Mraz AL, Weir MH
Ohio State University

8:50 AM W1-H.3

Evaluating Uncertainty and Variability in the Survival Module for Toxoplasma Gondii Tissue Cysts in Fresh Pork under a Temperature Gradient

Rani S, Dubey JP, Pradhan AK
University of Maryland, College Park

9:10 AM W1-H.4

Understanding Antimicrobial Resistance Along the Farm-to-fork Continuum using Integrated Assessment Modelling: Methods for the IAM.AMR Project

Sponsored by:
Microbial Risk Analysis SG

8:30 AM – 10:00 AM

Mardi Gras Ballroom E, 3rd Floor

W1-I Symposium: The Security and Resilience Nexus

Chair: Sissel Jore

8:30 AM W1-I.1

How to Explore the Uncertainty Dimension of Security: Resilience Driven Security
Jore SHJ
University of Stavanger

8:50 AM W1-I.2

Security and Resilience in Supply Chain Networks
Ganin AA, Mersky AC, Kitsak M, Keisler JM, Linkov I
University of Virginia, U.S. Army Engineer Research and Development Center, Northeastern University, University of Massachusetts Boston

9:10 AM W1-I.4

The Relationships between the Concepts of Resilience and Security in Sociotechnical Innovations
Ylönen MK
Technical Research Centre of Finland

Sponsored by:
Security & Defense SG

8:30 AM – 10:00 AM

Mardi Gras Ballroom FGH, 3rd Floor

W1-J Roundtable: Risky Conversations: Examining the Dual Impacts of the SRA Annual Meeting on Thinking and Practice in Risk Science

Chair: Katherine McComas

In this roundtable we discuss qualitative research examining informal discussions at the 2018 SRA Annual Meeting and their impact on the state of risk science and practice. The trajectory of discussion at the Annual Meeting is influenced by two forces. The first force is clear, well-documented and “top-down,”; it is the risk theme that is decided upon and advertised in advance of the meeting. The second force is more elusive. It is the tone of the conference that evolves “bottom-up” from the content of seminars, informal discussions, round-tables disputes, serendipitous questions asked at plenaries, and even sometime or ongoing feuds. This second force is critically important—as is its impact on the state of the science moving forward; however, SRA has yet to formally examine it or integrate discussion of it into the meeting’s proceedings. Much of this is the result of technological and logistical pressure, i.e., presenters having to generate their talks and posters in advance of the meeting. While necessary, such pressure makes it difficult for presenters to adapt to the evolving discussion leaving presenters to speak past one another, while more meaningful discussions and their impacts go unacknowledged. Rather than restructure the entire meeting, here we report on a series of ongoing interviews with members of the society (by necessity primarily in our own areas of risk communication and perception but including members of the society in general) at all levels (early, mid and late-level academics, practitioners and regulators) documenting how the events of the meeting shape both their thinking about risk issues and, importantly, their research and practice going forward. We will also suggest means for conducting and improving such research at later meetings.

Participants:
Walpole, Hugh
Bessette, Doug
Wilson, Robyn

Sponsored by:
Risk Communication SG

10:30 AM – 11:30 AM

Galerie 1, 2nd Floor

W2-A Symposium: Risk, Resilience, and Decision Making: Integrating Resilience into Risk Analysis and Adaptation Planning, Part II

Chair: Christian Beaudrie

10:30 AM W2-A.1

Modeling Climate Resilience in Smallholder Agricultural Systems: An Agent-based Approach
Williams TG, Guikema SD
University of Michigan

10:50 AM W2-A.2

Vulnerability of Wastewater Systems to Changing Environmental Conditions
Finster ME
Argonne National Laboratory

11:10 AM W2-A.3

The Impact of Differing System Structures and Governance Models on Resilience Planning for Electric Power
Jones KA, Jeffers RF, Broderick R
Sandia National Laboratories

Sponsored by:
Resilience Analysis SG

10:30 AM – 12:00 PM

Galerie 2, 2nd Floor

W2-B Roundtable: Educating Kids to Risk: What Can be Done, What Has been Done and What Remains to be Done

Chair: Frederic Boudier

As early as the 1980s, Israeli psychologists conducted experiments focusing on helping kids to make better decisions when faced with the risk of terrorism. Today, the interest for teaching kids and adolescents about risk has spread and deepened. Professionals and scholars are bringing the concepts of risk to schools, from Oregon to the Netherlands. Experiments are focusing on several problems, from terrorism to natural disasters or ordinary life situations. Although these insights are valuable and promising, more fundamental reflections are needed to better conceptualise risk teaching as well as investigate and analyse its outcomes. For instance, a novel element of these experiments focuses on the importance of children becoming aware of their bodily responses or feelings when learning about the risk- concept. Although the importance of feelings for deciding about a risk is well recognised, they have so far been neglected in risk teaching. Some possible inroads will be a central aspect of the discussion. What is needed is both a conceptual and policy relevant approach to risk education. Many questions remain unsolved: how does risk teaching relate to the field of risk studies? What is the actual impact on children? How can they be scientifically evaluated from a risk research perspective? How can these results be then translated into education policy? How to integrate risk analysis and pedagogical competence? The roundtable will assemble risk scholars and practitioners to discuss conceptual needs as well as concrete experiments.

Participants:
Lofstedt, R., King's College London
Boudier, F., Univ. of Stavanger
Aven, T., Univ. of Stavanger
Ylonen, M, VTT
Louie Rivers, North Carolina State University

Sponsored by:
Foundational Issues in Risk Analysis SG

10:30 AM – 12:00 PM

Galerie 3, 2nd Floor

W2-C Health Safety, Risks and Toxicity

Chair: Bernard Goldstein

10:30 AM W2-C.1

The "Bad Luck" Cancer Hypothesis: Relevance to Environmental Risk Assessment and to Toxic Torts
Goldstein BD
University of Pittsburgh Graduate School of Public Health

10:50 AM W2-C.2

A Case Study in Reproducibility: The Threshold of Toxicological Concern for Non-Cancer Endpoints
Powell MR
US Department of Agriculture

11:10 AM W2-C.3

Driving Impairment from Cannabis Use: Prediction of 9-Tetrahydrocannabinol (THC) Blood Levels Using Driving Simulator Results and Alcohol Crash Risk Data
Simon TW, Janus E
Ted Simon LLC, Steptoe & Johnson, LLP

11:30 AM W2-C.4

The Impact of the Power Morcellator Controversy on Inpatient Surgery and Patient Outcomes
*Schuttringer E, Beleche T**
FDA

Sponsored by:
Risk Policy and Law SG

10:30 AM – 12:10 PM

Galerie 4, 2nd Floor

W2-D Symposium: Advances in Risk Management and Resilience Practices for Infrastructure and Environmental Systems

Chair: Sheree Pagsuyoin

10:30 AM W2-D.1

Stochastic Input-Output Analysis of the US Information Technology Infrastructure Disruptions
*Ali J, Santos JR**
George Washington University

10:50 AM W2-D.2

A Risk Analysis Framework for Cyber Security and Critical Infrastructure Protection of the US Electric Power Grid
*Baggott S, Santos JR**
George Washington University

11:10 AM W2-D.3

Spatial Dependence Modeling of Wind Resource Under Uncertainty Using C-Vine Copulas and Its Impact on Solar-Wind Energy Co-Generation
Narayan A, Ponnambalam K, Pagsuyoin SA
University of Waterloo

11:30 AM W2-D.4

Calculating Impact of Cyber Incidents and Threats on Business Processes
Tatar U, Keskin OF, Poyraz OI, Pinto CA
Old Dominion University, SUNY at Albany

11:50 AM W2-D.5

Decision and Risk Modeling for Interdependent Multi-network Infrastructure Systems
Thekdi SA, Aros-Vera F
University of Richmond

Sponsored by:
Engineering and Infrastructure SG

10:30 AM – 12:00 PM

Galerie 5, 2nd Floor

W2-E Roundtable: Addressing Emerging Risks in Consumer Products

Co-chairs: Treye Thomas, Igor Linkov

The use of emerging technologies in consumer products has expanded rapidly, revealing both innovative improvements over conventional technologies, as well as novel risks to human health and the environment. Moreover, the convergence of new technologies (e.g., new materials and artificial intelligence) into a consumer product generates hazards and threats that had been previously uncertain or poorly framed. In certain cases, this uncertainty has been magnified by social taboos and stigmas which left society reluctant to address emerging consumer product risk concerns. This presents challenges for stakeholders who manage product risks which are responsible for protecting the public health from unreasonable risks. In this spirit, this roundtable will discuss new challenges posed by emerging consumer products and the latest efforts to address current and future technological challenges. The roundtable will begin by discussing consumer product innovation and risk analysis at the micro-scale, such as with consumer products enabled via engineered nanomaterials and advanced materials, as well as emerging applications of synthetic biology. Next, the roundtable will address emerging topical challenges on the macro scale, such as the difficult and socially stigmatized potential hazards of sex robots which make use of innovative breakthroughs in artificial intelligence, mechanical engineering, and various other fields.

Participants:
Treye Thomas, Consumer Product Safety Commission
Igor Linkov, US Army Corps of Engineers
Christine Hendren, Duke University
Jacquelyn (Ruddie) Clarkson, Former Chief Epidemiologist, State of LA

Sponsored by:
Applied Risk Management SG

10:30 AM – 11:30 AM	10:30 AM – 11:00 AM	10:30 AM – 12:00 PM	10:30 AM – 11:30 AM	10:30 AM – 12:00 PM
<p><i>Galerie 6, 2nd Floor</i></p> <p>W2-F Symposium: Benefit-Risk Assessment for Regulatory Review of Human Drugs and Biologics</p> <p><i>Chair: Hong Yang</i></p>	<p><i>Mardi Gras Ballroom ABC, 3rd Floor</i></p> <p>W2-G Mining & Waste Disposal</p> <p><i>Chair: Chris Greene</i></p>	<p><i>Mardi Gras Ballroom D, 3rd Floor</i></p> <p>W2-H Improving Risk-Benefit Estimates for Regulatory Analysis</p> <p><i>Chair: Amber Jessup</i></p>	<p><i>Mardi Gras Ballroom E, 3rd Floor</i></p> <p>W2-I Risk Modeling for Prevention</p> <p><i>Co-chairs: Frank Hearl, Scott Dotson</i></p>	<p><i>Mardi Gras Ballroom FGH, 3rd Floor</i></p> <p>W2-J From Flint to Fracking: Media & Environmental Risk</p> <p><i>Chair: Sharon Friedman</i></p>
<p>10:30 AM W2-F.1</p> <p>Implementation of a Structured Benefit-Risk Framework into FDA's Human Drug Review</p> <p><i>Thompson GW, Lackey LG, Eggers SL*</i></p> <p><i>Food and Drug Administration</i></p>	<p>10:30 AM W2-G.2</p> <p>Human Health Risk and Decision Analysis for Artisanal Small-Scale Gold Mining (ASGM) in Alto Cauca, Colombia</p> <p><i>Morgan VL, Vanegas DC, Vélez-Torres I, Kiker G, McLamore ES</i></p> <p><i>University of Florida, Universidad de Valle, Colombia</i></p>	<p>10:30 AM W2-H.1</p> <p>Two Far-reaching Changes to How We Quantify and Balance Risks and Regulatory Costs</p> <p><i>Finkel AM</i></p> <p><i>University of Michigan, University of Pennsylvania</i></p>	<p>10:30 AM W2-I.1</p> <p>Two-Zone Modeling to Predict Airborne Exposures Using IH Mod 2.0 with Monte Carlo Simulation</p> <p><i>Armstrong T, Williams PRD, Drolet D</i></p> <p><i>TWA8HR Occupational Hygiene Consulting, LLC</i></p>	<p>10:30 AM W2-J.1</p> <p>Any News is Good News: The Importance of Access to Local Information for Ameliorating Psychological Stress about Shale Gas Development Risks in Rural Pennsylvania</p> <p><i>Casagrande DG, Friedman SM*</i></p> <p><i>Lehigh University</i></p>
<p>10:50 AM W2-F.2</p> <p>CBER's Experience with Benefit-Risk</p> <p><i>Yang H, Forshee RA</i></p> <p><i>Office of Biostatistics and Epidemiology, CBER, FDA</i></p>	<p>Sponsored by:</p> <p><i>Exposure Assessment SG</i></p>	<p>10:50 AM W2-H.2</p> <p>How Can We Improve Efficiency of Clinical Trials?</p> <p><i>Sertkaya A, Jessup A, Ertis D</i></p> <p><i>Eastern Research Group, Inc.</i></p>	<p>10:50 AM W2-I.3</p> <p>A Control Banding Framework for Infection Risk from Aerosol Transmissible Diseases</p> <p><i>Sietsema MM, Brosseau LM, Fisher E, Koonin LM, Shaffer R, Radonovich L, Hearl FJ*</i></p> <p><i>National Institute for Occupational Safety and Health</i></p>	<p>10:50 AM W2-J.2</p> <p>Earthquake Country: A Qualitative Analysis of the Uses of a Facebook Discussion Group for Risk Communication</p> <p><i>Lambert CE</i></p> <p><i>Cornell University</i></p>
<p>11:10 AM W2-F.3</p> <p>Effective Use of Structured Benefit-Risk Assessment: Challenges and Future Directions</p> <p><i>Noel RA</i></p> <p><i>Eli Lilly and Company</i></p>		<p>11:10 AM W2-H.3</p> <p>Discovering Relevant Covariates with Sparse Discrete Choice Models for the Valuation of Environmental Goods</p> <p><i>de la Maza C, Davis A, Azevedo I</i></p> <p><i>Carnegie Mellon University</i></p>	<p>11:10 AM W2-I.4</p> <p>Principal Agent Theory, Game Theory and the Precautionary Principle</p> <p><i>Hausken K</i></p> <p><i>University of Stavanger</i></p>	<p>11:10 AM W2-J.3</p> <p>Representing Heatwaves on TV News: Beaches, Bathers and Burning</p> <p><i>Hanson-Easey S, Hansen A, Williams S, Bi P</i></p> <p><i>The University of Adelaide</i></p>
<p>Sponsored by:</p> <p><i>Decision Analysis and Risk SG</i></p>		<p>11:30 AM W2-H.4</p> <p>Estimating Social Benefits of N Lives Saved: Final Experiments on Framing Effects and Nonlinear Value Functions</p> <p><i>Johnson BB, Finkel AM</i></p> <p><i>Decision Research, University of Michigan</i></p>	<p>Sponsored by:</p> <p><i>Occupational Health and Safety SG</i></p>	<p>11:30 AM W2-J.4</p> <p>Understanding #FlintWaterCrisis: Risk Communication and Attribution of Responsibility on Twitter</p> <p><i>Roche AJ, Rickard LN, Rosenbaum JE</i></p> <p><i>University of Maine</i></p>
		<p>Sponsored by:</p> <p><i>Economics and Benefits Analysis SG & The Society for Benefit Cost Analysis (SBCA)</i></p>		<p>Sponsored by:</p> <p><i>Risk Communication SG</i></p>

1:30 PM – 2:30 PM	1:30 PM – 2:30 PM	1:30 PM – 3:00 PM	1:30 PM – 3:00 PM	1:30 PM – 2:30 PM
<p><i>Galerie 1, 2nd Floor</i> W3-A Resilience and Critical Infrastructure <i>Chair: Margaret Kurth</i></p>	<p><i>Galerie 2, 2nd Floor</i> W3-B Symposium: Foundational Issues in Risk Analysis V <i>Chair: Scott Ferson</i></p>	<p><i>Galerie 3, 2nd Floor</i> W3-C Roundtable: Food Innovations: Communication and Regulation for Commercial Viability <i>Chair: Sandra Hoffman</i></p>	<p><i>Galerie 4, 2nd Floor</i> W3-D Symposium: Advancements in Quantitative Applications for Data Integration in the Characterization of Hazard, Dose-Response, and Uncertainty <i>Chair: Daniele Wikoff</i></p>	<p><i>Galerie 5, 2nd Floor</i> W3-E Advanced Methodology to Support Risk Management <i>Chair: Willy Roed</i></p>
<p>1:30 PM W3-A.1 How Much Does Resilience Cost in Transportation Networks? <i>Ganin AA, Kitsak M, Mersky AC, Linkov I University of Virginia, U.S. Army Engineer Research and Development Center, Northeastern University</i></p>	<p>1:30 PM W3-B.1 Explicit and Tacit Assumptions in Risk Assessment – Some Examples and Assessment Strategies <i>Askeland T, Flage R University of Stavanger</i></p>	<p>Dramatic science and technology advances in culturing methodologies, genetic modifications, and CRISPR techniques are offering practical, commercially viable opportunities to improve existing food products and create new food sources. The interface of emerging scientific research and technological applications is revolutionizing many aspects of the food and agricultural industry while simultaneously creating new challenges for regulatory agencies responsible for the safety of the food supply. Given the speed at which innovations are finding their way to the market, a comprehensive narrative, endorsed by private sector-governmental stakeholders, is required to accurately inform the public about these new food choices. Communication currently used to publicly introduce new, modified food products need to reflect the diverse view of a broad cross section of stakeholders (e.g., retail distributors, marketing experts, public advocacy groups, etc.).</p> <p>Success by all stakeholders will certainly depend on public trust in how new food will promote healthy lifestyles while promoting economic prosperity. Research has confirmed that consistent, evidence-based public messaging benefits all stakeholders. This panel will provide the necessary historical context in which science and tech advances in food and agriculture are currently operating. It will provide perspectives from industry, government, and communication science to inform the comprehensive narrative necessary for public adoption of food innovations.</p>	<p>1:30 PM W3-D.1 Quantitative, Meta-analytical Approaches for the Analysis of Animal Toxicological and Epidemiologic Data in Human Health Risk Assessments <i>Davis JA, Kopylev L, Gift J US Environmental Protection Agency</i></p>	<p>1:30 PM W3-E.1 Machine Learning and Expert Judgment to Inform Risk Management Decision Making <i>Barrett AM ABSG Consulting (ABSG Group)</i></p>
<p>1:50 PM W3-A.2 Building Resilience of Buildings <i>Kurth MH, Linkov I US Army Engineering Research and Development Center</i></p>	<p>1:50 PM W3-B.3 On the Role of Protocol Driven Resilience in Coupled Infrastructure and Natural Systems <i>Amodeo DC, Francis RA* George Washington University</i></p>	<p>Participants: Chakraborty, Sweta Bouder, Frederic Bobo, Jack Kulkarni, Deepti</p>	<p>1:50 PM W3-D.2 Inflammation as a Tumor Co-Initiator: New Theory Predicts Most (Perhaps All) Carcinogens Increase Cancer Risk Nonlinearly at Low Doses <i>Bogen KT Consulting Toxicologist</i></p>	<p>1:50 PM W3-E.2 A Defense of Small Data: Risk Prediction Approaches that Reduce Privacy Invasions Applied to Adverse Pregnancy Outcomes <i>Davis A, Krishnamurti T Carnegie Mellon University</i></p>
<p>2:10 PM W3-A.4 Decision and Risk Modeling for Implementing Regional Environmental Protection Policies on Interdependent Economic and Infrastructure Systems <i>Resurreccion JZ, Santos JR University of the Philippines</i></p>	<p>2:10 PM W3-B.4 Naked Expert Elicitations of Probabilities of Rare Events <i>Ferson S Institute for Risk and Uncertainty</i></p> <p>Sponsored by: <i>Foundational Issues in Risk Analysis SG</i></p>	<p>Sponsored by: <i>Risk Policy and Law SG</i></p>	<p>2:10 PM W3-D.3 Non-Parametric Benchmark Dose Models for Non-Monotone Dose-Response Relationships <i>Wheeler MW NIOSH</i></p>	<p>2:10 PM W3-E.3 Individual Differences, Bonus Schemes and Responsive Risk Bearing: Implications for Modeling, Management and Policy <i>Soane E, Aufegger L, Harris Q, Mercieca A, Tanaka M London School of Economics and Political Science</i></p>
<p>Sponsored by: <i>Resilience Analysis SG</i></p>	<p>Sponsored by: <i>Applied Risk Management SG</i></p>	<p>2:30 PM W3-D.4 Practical Applications of Meta-regression and Bayesian Approaches to Characterize Dose-response and Uncertainty in Development of Toxicity Values <i>Ring CL, Wikoff DS, Thompson C, Budinsky RA, Haws LC ToxStrategies, Inc.</i></p>	<p>Sponsored by: <i>Dose Response SG</i></p>	<p>Sponsored by: <i>Applied Risk Management SG</i></p>

1:30 PM – 2:30 PM

Galerie 6, 2nd Floor

W3-F Decision Analysis Applications and Case Studies

Chair: Ben Trump

1:30 PM W3-F.1

Stochastic Extensions to Input-Output Model for Evaluating the Impacts of Information Technology Disruptions on Interdependent Economic Sectors

*Ali J, Santos JR**

The George Washington University

1:50 PM W3-F.2

Managing the Risk of Satellite Collisions: A Probabilistic Risk Analysis of Improving Space Surveillance Systems

Kim RH, Paté-Cornell ME

Stanford University

2:10 PM W3-F.4

Use of Multi Attribute Decision Analysis Models to Characterize the CBRNE Vulnerabilities of Countries to Help Support Global Threat Reduction Actions

Caskey S, Williams A, Ezell B

Sandia National Laboratories

Sponsored by:

Decision Analysis and Risk SG

1:30 PM – 3:00 PM

Mardi Gras Ballroom ABC, 3rd Floor

W3-G Symposium: Potential Exposure and Health Effects Related to the Development of Oil and Natural Gas from Unconventional Resources in the United States

Chair: Donna Vorhees

1:30 PM W3-G.1

Potential Exposures to Unconventional Oil and Gas Operations in the United States: What Do We Know?

LaKind J, Hornberger G, Dunn-Norman S, Faustman E, Hu H, Russell A, Sebelt Sarnat S, Liziewski K, Rosofsky A, Vorhees D
LaKind Associates, LLC

1:50 PM W3-G.2

Human Health Risk Assessments of Unconventional Oil and Gas Operations in the United States

Vorhees D, Hornberger G, Dunn-Norman S, Faustman E, Hu H, LaKind J, Russell A, Sebelt Sarnat S, Liziewski K, Rosofsky A
Health Effects Institute

2:10 PM W3-G.3

Potential Health Effects from Unconventional Oil and Gas Development: A Systematic Review of the Epidemiology Literature

Rosofsky A, Hornberger G, Dunn-Norman S, Faustman E, Hu H, LaKind J, Russell A, Sebelt Sarnat S, Liziewski K, Vorhees D
Health Effects Institute

2:30 PM W3-G.4

Research Priorities for understanding Potential Population-level Exposures to Unconventional Oil and Natural Gas Development

Hornberger G, Dunn-Norman S, Faustman E, Hu H, LaKind J, Russell A, Ebel Sarnat S, Liziewski K, Rosofsky A, Vorhees D
Vanderbilt University

Sponsored by:

Exposure Assessment SG

1:30 PM – 2:30 PM

Mardi Gras Ballroom D, 3rd Floor

W3-H Economics of Environmental Policy

Chair: Lisa Robinson

1:30 PM W3-H.1

Increasing the Benefits of Air Quality Warnings

Robinson LA, Buonocore J, Hammitt JK, O’Keeffe L
Harvard University

1:50 PM W3-H.2

Risk of Bias Analysis of Ozone Epidemiological Studies Used in BenMAP Analyses

Sax SN, Dell L, Mundt KA, Lewis RJ
Ramboll

2:10 PM W3-H.3

“Economic Feasibility” Under the Safe Drinking Water Act: Achieving Efficiency, Equity and Equal Protection

Belzer RB
Independent Consultant

Sponsored by:

Economics and Benefits Analysis SG & The Society for Benefit Cost Analysis (SBCA)

1:30 PM – 3:00 PM

Mardi Gras Ballroom E, 3rd Floor

W3-I Symposium: What Risk Assessors Should Know This Year about Occupational Risk Analysis: From Chemical Exposure to Traumatic Brain Injury to Cumulative Risk Assessment

Chair: Scott Dotson

1:30 PM W3-I.1

Chronic Traumatic Encephalopathy in the NFL Workplace: Risk Assessment Needed to Dispel Manufactured Doubt

Finkel AM, Bieniek KF
University of Michigan School of Public Health, Mayo Clinic

1:50 PM W3-I.2

Using Long-Term Integrated Sampling of Indoor Air (2-weeks) at Vapor Intrusion Sites to Assess Risk in Occupational Environments

Rossner A, Lutz C, Stone B
Clarkson University

2:10 PM W3-I.3

Developments in Cumulative Risk Assessment: Approaches for Occupational Health and Beyond

Fox MA
Johns Hopkins University

2:30 PM W3-I.4

Dermal Contact with Solid Metals and Implications for Both Occupational and Public Health Risk Assessment: Lead, Zinc, and Copper

Sahmel J, Ramachandran G
University of Minnesota, Johns Hopkins University, Insight Exposure and Risk Sciences

Sponsored by:

Occupational Health and Safety SG

1:30 PM – 2:30 PM

Mardi Gras Ballroom FGH, 3rd Floor

W3-J Symposium: Low-Carbon Energy Transitions: Linking Stakeholder Exchanges & Risk Communication

Co-chairs: Bonnie Ram, Katherine McComas

1:30 PM W3-J.1

Improving Clean Energy Elicitation Processes: Providing Meaningful Alternatives, Attributes and Assistance

Bessette DL
Michigan State University

1:50 PM W3-J.2

Low-carbon Energy Transitions: Developing Renewable Energy Projects in Line with Public Values

Demski C
Cardiff University

2:10 PM W3-J.3

Lessons Learned at the First Offshore Wind Farm in the U.S.

Bidwell D
University of Rhode Island

Sponsored by:

Risk Communication SG

3:30 PM – 5:00 PM

Galerie 1, 2nd Floor

W4-A Risk Perceptions and Decision Making: Approaches to Understanding Judgments and Supporting Decisions from Agriculture to Climate Change

Chair: Zach Collier

3:30 PM W4-A.1

Using Decision Support to Overcome Resistance to Science-Based Recommendations

Besette DL, Wilson RS, Beaudrie CEH
Michigan State University

3:50 PM W4-A.2

An Intersectional Analysis of Young Ghanaian Women's Responses to Climate Change

Wood AL
North Carolina State University

4:10 PM W4-A.3

Understanding Cumulative Risk Perception from Judgments and Choices: An Application to Flood Risks

De La Maza C, Davis A, Azevedo I, Gonzalez C
Carnegie Mellon University

4:30 PM W4-A.4

Modeling the Relationship between Emotional Responses to and Judgments of Scientific Evidence

Drummond C, Fischhoff B
University of Michigan, Carnegie Mellon University

3:30 PM – 5:10 PM

Galerie 2, 2nd Floor

W4-B Symposium: Modernization of Study Quality Evaluation — A Survey and Discussion of the Evaluation and Integration of Study Validity as Part of Systematic Review

Chair: Daniele Wikoff

3:30 PM W4-B.1

Application of Systematic Review in TSCA Risk Evaluations

Camacho-Ramos IA, Beck N
US Environmental Protection Agency

3:50 PM W4-B.2

Research Quality in Focus: A Retrospective Look at Food & Nutrition Research

Doe JB, Myers E*
EF Myers Consulting

4:10 PM W4-B.3

Considerations and Approaches for Study Evaluation in Chemical Health Assessments

Kraft A, Thayer KA
U.S. Environmental Protection Agency

4:30 PM W4-B.4

Application of Risk of Bias in Evaluation of Epidemiological Study Quality: Successes and Challenges

Taylor KW, Rooney AA
National Toxicology Program

4:50 PM W4-B.5

A Discussion on the Practice of Evaluating and Integrating Study Validity in Systematic Assessments Involving Multiple Evidence Streams

Wikoff DS, Urban J, Doepker C, Chappell G, Borghoff S
ToxStrategies

Sponsored by:
Foundational Issues in Risk Analysis SG

3:30 PM – 5:00 PM

Galerie 3, 2nd Floor

W4-C Symposium: Evaluating Public Health Impacts of Electronic Nicotine Delivery Systems

Co-chairs: Phil Yeager, Roxana Weil

3:30 PM W4-C.1

FDA Tobacco Regulations and Considerations for Evaluating Human Health Risks of Electronic Nicotine Delivery Systems (ENDS)

Weil RE
US Food and Drug Administration Center for Tobacco Products

3:50 PM W4-C.2

Evaluating Flavors in Newly Deemed Tobacco Products

Benson KA
US Food and Drug Administration Center for Tobacco Products

4:10 PM W4-C.3

Electronic Cigarette Heterogeneity Influences Individual and Population-level Effects

Eissenberg TE
Virginia Commonwealth University

4:30 PM W4-C.4

Evaluation of Chemical Exposures at Three Vape Shops Throughout the United States

Zwack LM, LeBouf RF, Chiu S, Stefaniak AB
National Institute for Occupational Safety and Health

3:30 PM – 5:10 PM

Galerie 4, 2nd Floor

W4-D Symposium: Cancer Risk Assessment

Chair: Andrey Korchevskiy

3:30 PM W4-D.1

Background Cancer Rates and Background Exposure: Theoretical and Practical Considerations

Rasmuson EJ
Chemistry & Industrial Hygiene, Inc.

3:50 PM W4-D.2

Mathematics of Extrapolation: Validation of Dose-response Relationships at the Low Exposure Levels

Korchevskiy A, Rasmuson J
Chemistry & Industrial Hygiene, Inc.

4:10 PM W4-D.3

Bayesian Analysis of Residual Risk: This is What We Mean by Safe

Pagone FJ
RHP Risk Management Inc.

4:30 PM W4-D.4

Asbestos Lung Burden Analysis: What We Know About Background Levels in Non-exposed Individuals

Carney JM, Pavlisko EN, Sporn TA, Roggli VL
Duke University Medical Center

4:50 PM W4-D.5

Reconstruction of Takehome Exposure: Are the Risks Significant?

Boelter F
RHP Risk Management Inc.

Sponsored by:
Dose Response SG and Occupational Health and Safety SG

3:30 PM – 5:00 PM

Galerie 5, 2nd Floor

W4-E Risk Management in Emergency Management, Risk Communication and Environmental Justice

Chair: Steve Ackerlund

3:30 PM W4-E.2

Environmental Justice Implications of Flood Risk Management Policies in Louisiana

Ishinabe N, Johnson DR
Purdue University

3:50 PM W4-E.3

Improving Storm Surge Hazard Characterization Using "Pseudo-surge" to Augment Hydrodynamic Simulation Outputs

Shisler MP, Johnson DR
Purdue University

4:10 PM W4-E.4

Are You Communicating the Correct Message? Exploring the Challenge & Opportunities in Risk Communication.

Dyer R
University of Liverpool

4:30 PM W4-E.5

Factors of Selecting Areas in which to Build Emergency Management Capacity: A Survey of Japanese Municipal Governments

Kato T
University of Kitakyushu

Sponsored by:
Applied Risk Management SG

3:30 PM – 5:00 PM

Galerie 6, 2nd Floor

W4-F Roundtable: Navigating the Risk Landscape: Facilitating Critical Thought in an Information Rich World

Chair: Donna Moenning

Science and discovery are advancing at a rapid pace and consumers are hard pressed to keep up. Inaccurate, yet compelling, narratives and visuals promulgated via social media widen the gap between actual risks and risk perceptions. This creates uncertainties for consumers. In a world where we are prone to cognitive leaps and the scary stuff is always easier to believe, how can consumers make sense of complex information related to risk? As risk communicators, we are constantly challenged to operate in this complex environment. We are tasked to better understand how various publics recognize and react to risk and to find ways of proactively and effectively communicating in an environment of growing distrust. For this panel session, our experts will:

1. Provide an overview of the social contexts within which vast amounts of information is shared;
2. Discuss how social media and the media shapes public perceptions of science and risk;
3. Showcase examples of how risk can be communicated in meaningful ways to diverse audiences;
4. Explore options (remedies) for empowering the public to think critically about information and to showcase new outreach and communication opportunities.

Panelists:

Alison Bernstein, Michigan State University
Iida Ruishalme, Thoughtscapism
Charlie Arnot, The Center for Food Integrity

3:30 PM – 5:10 PM

Mardi Gras Ballroom ABC, 3rd Floor

W4-G Symposium: Understanding the Ecological and Health Risks Associated with Trace Organics in the Environment

Chair: Sheree Pagsuyoin

3:30 PM W4-G.1

Identifying the Next Drug Epidemic by Testing Municipal Wastewater
*Keshaviah A
Mathematica Policy Research*

3:50 PM W4-G.2

Detection of Illicit Drugs in Sewage and Analysis of Community Drug Use Through Wastewater Data
*Pagsuyoin SA, Bello D, Luo J
University of Massachusetts Lowell*

4:10 PM W4-G.3

Exploring Designer Porous Materials for Organic, Inorganic, and Gaseous Contaminants in the Environment.
*Perman JA
University of South Florida*

4:30 PM W4-G.4

PAH Contaminant Accumulation in Stormwater Catchment Basins: New Implications for Management Guidelines
*Oyanedel-Craver V, Kasaraneni V, Shifman
Univeristy of Rhode Island*

4:50 PM W4-G.5

Risk Threshold Calculation for Emerging Contaminants – Just Because it is There, and We Can Now Detect it, Does that Mean that it is Toxic?
*Kashuba RO, Goodfellow W, Royer L, Gard N
Exponent*

Sponsored by:
Ecological Risk Assessment SG

3:30 PM – 4:30 PM

Mardi Gras Ballroom D, 3rd Floor

W4-H Economics of Low Probability / High Impact Events

Chair: Deborah Aiken

3:30 PM W4-H.1

Treatment of Risks and Benefits in DHS Security Regulations: Theory and Practice
*Gungor A, Aiken D
U.S. Coast Guard, U.S. Department of Transportation*

3:50 PM W4-H.3

U.S. Tropical Cyclone Flood Insurance Claim Losses: Storm Surge vs. Freshwater
*Tonn GL, Czajkowski JR
University of Pennsylvania*

4:10 PM W4-H.5

Are Elicited Risk Perceptions Reliable Enough to be Used in Decision-makings? Some Evidence from Residential Customers' Costs of Large Long-duration Power Outages in Regions Facing Significant Risks
*Baik S, Davis AL, Morgan MG
Carnegie Mellon University*

Sponsored by:
Economics and Benefits Analysis SG & The Society for Benefit Cost Analysis (SBCA)

3:30 PM – 5:00 PM

Mardi Gras Ballroom E, 3rd Floor

W4-I Communicating Health & Environmental Risks

Chair: Christopher Cummings

3:30 PM W4-I.1

Mental Models Risk Communication to Promote Private Well Testing in Underserved Minority Communities, Part I: Communication Design
*Wood E, Stillo III FJ, Bruine de Bruin W, Lockhart S, MacDonald Gibson J
University of North Carolina at Chapel Hill, Leeds University Business School*

3:50 PM W4-I.2

Mental Models Risk Communication to Promote Private Well Testing in Underserved Minority Communities, Part II: Randomized-controlled Trial
*Stillo III FJ, Wood E, Bruine de Bruin W, MacDonald Gibson J
University of North Carolina at Chapel Hill, Leeds University Business School*

4:10 PM W4-I.3

What Prompts People to Believe that Vaccines Cause Disease? A Cross-cultural Comparison of How People Misperceive Vaccinations
*Cummings CL
Nanyang Technological University, Singapore*

4:30 PM W4-I.4

Communicating Risk in Entertainment: The Role of Social Norms
*McClaran N
Michigan State University*

Sponsored by:
Risk Communication SG

3:30 PM – 5:10 PM

Mardi Gras Ballroom FGH, 3rd Floor

W4-J Climate Change Communication: Implications for Messaging

Chair: Laura Rickard

3:30 PM W4-J.1

Beyond Fear: Examining the Role of Discrete Negative Emotions in Climate Change Risk Perception
*Atkinson L
University of Texas at Austin*

3:50 PM W4-J.2

Communicating the Scientific Consensus on Climate Change: A Meta-Analysis of Experiment-Based Studies
*Clarke CE, van der Linden S, Ross R
George Mason University, University of Cambridge, University of London*

4:10 PM W4-J.3

Instability in Public Preferences Around Climate-Adaptive Forestry in British Columbia
*Findlater KM, Peterson St-Laurent G, Hagerman S, Kozak R
University of British Columbia*

4:30 PM W4-J.4

Impact of Climate Change Message Frames on Risk Perception and Adaptation to Climate-exacerbated Hazards
*Walpole EH, Wilson RS, Toman E
The Ohio State University*

4:50 PM W4-J.5

Thinking Beyond Party Lines: Separating Climate Mitigation Policy from Political Ideology
*Zwickle A, Singh A
Michigan State University, California State University Sacramento*

Sponsored by:
Risk Communication SG

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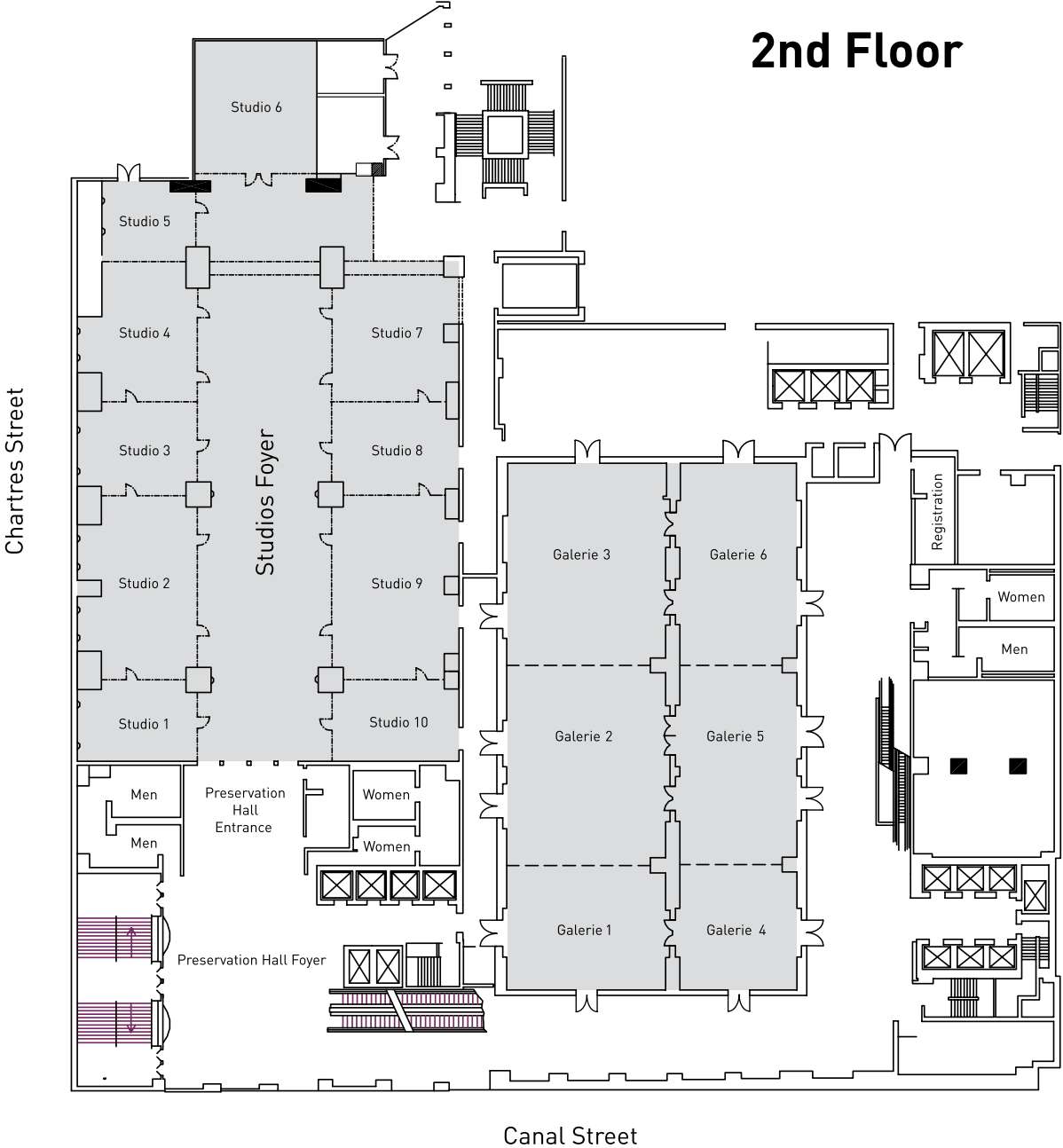
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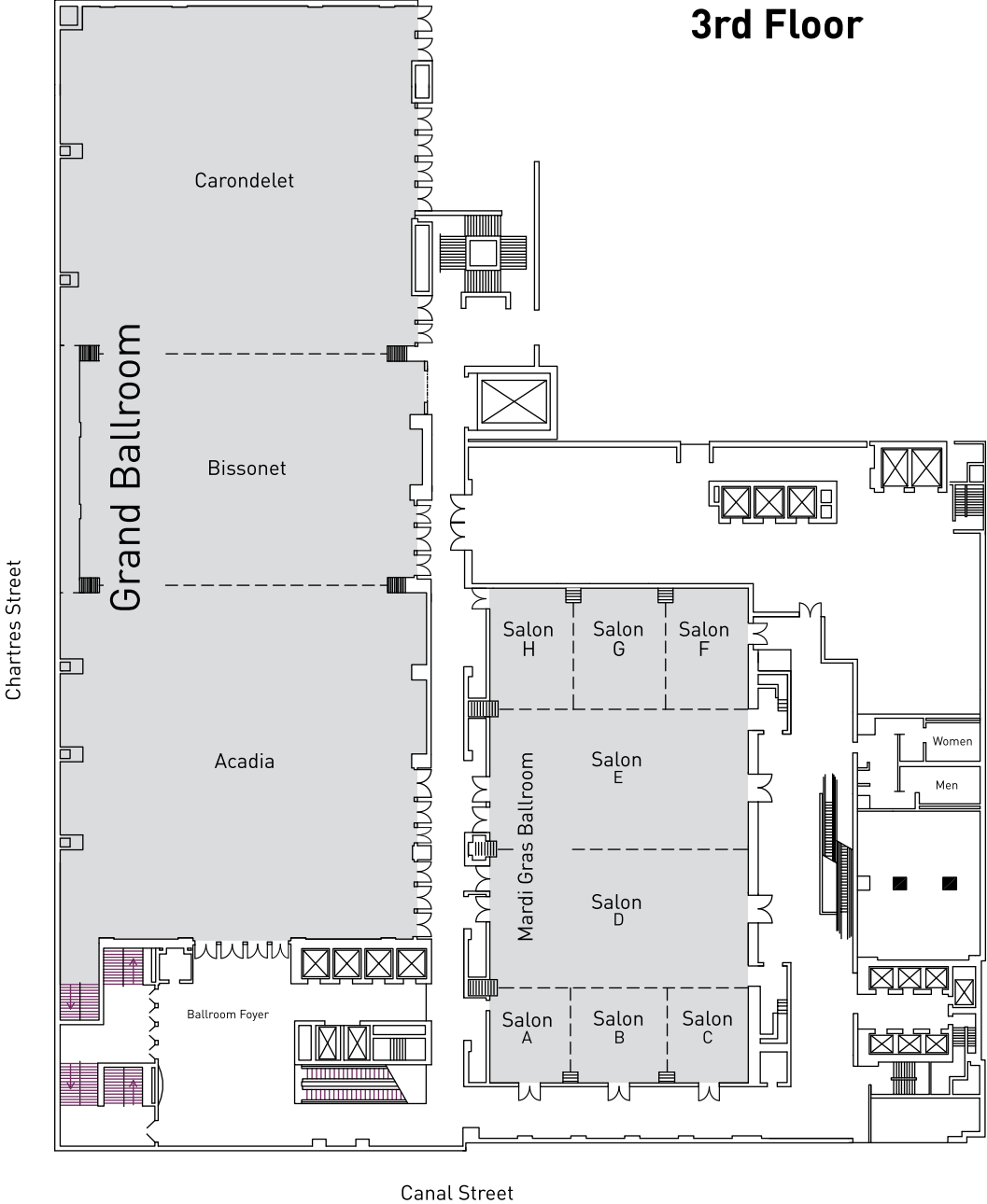
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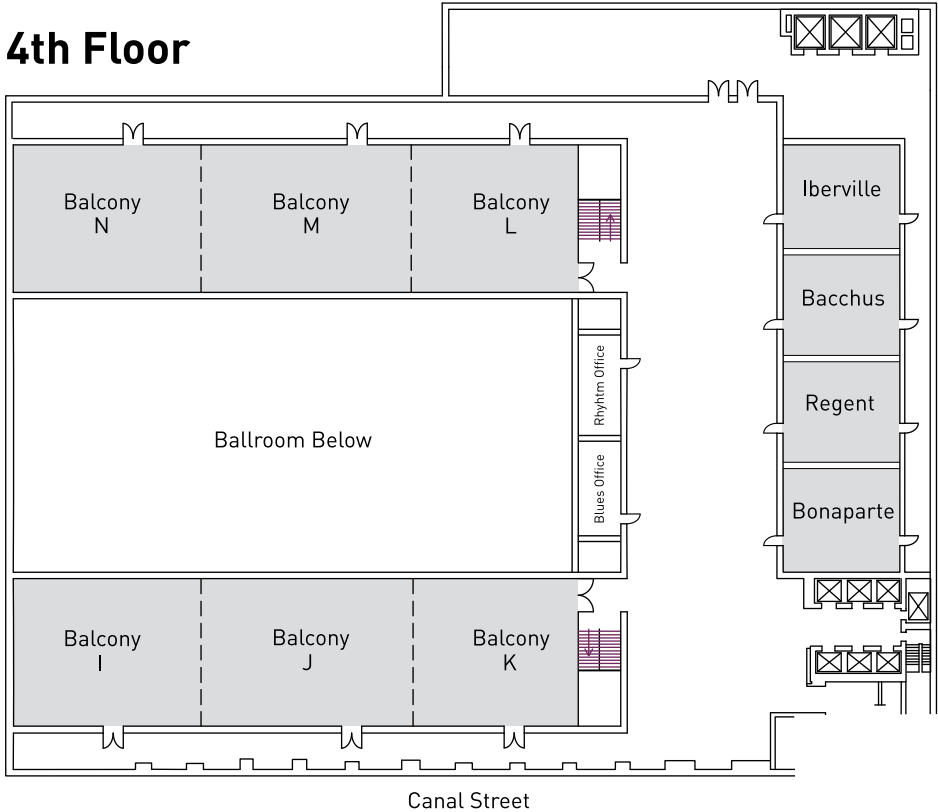


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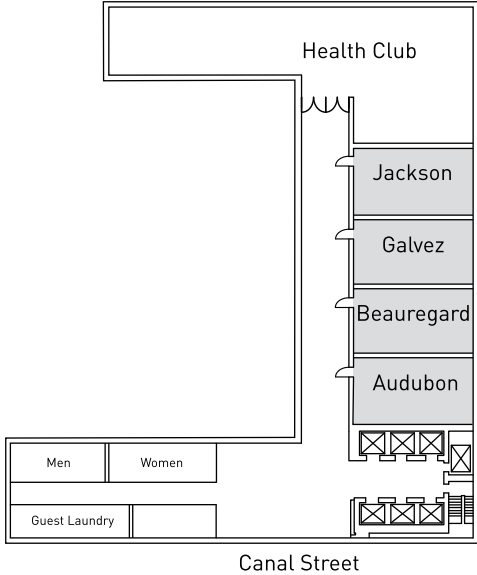


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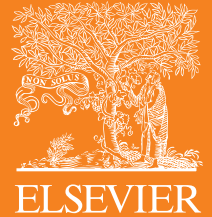
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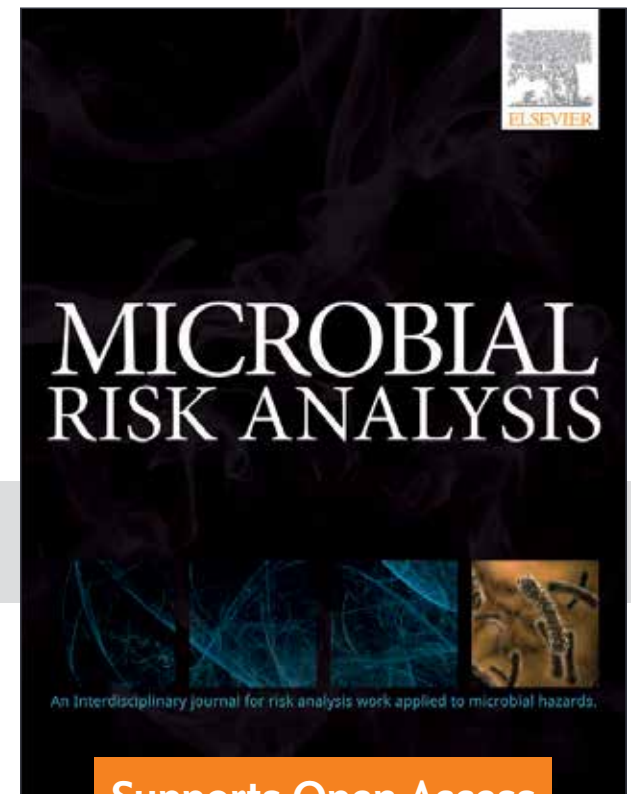
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