出國報告（出國類別：開會）

2022 美國風險分析學會年會

服務機關：行政院環境保護署毒物及化學物質局
姓名職稱：連珖彣高級環境技術師、齊慕凡技士
派赴國家/地區：美國/佛羅里達州坦帕
出國期間：111 年 12 月 2 日至 111 年 12 月 11 日
報告日期：112 年 2 月 7 日

摘 要

國際風險分析學會(Society for Risk Analysis，簡稱 SRA)成立於西元 1980 年，該學會自 1981 年持續至今出刊「Risk Analysis: An International Journal」，為風險分析領域極具指標性的學術期刊。SRA 定期在每年 12 月第二周舉辦研討會，2022 年 12 月 4-8 日在美國佛羅里達州坦帕舉辦 SRA 年度會議（SRA Annual Meeting），本次會議主題為「全球風險@臨界點：風險分析和政策推動系統性變革」，旨在促進全球關注的風險問題的對話和教育。今年度會議之主題包括：「全球背景下的系統性風險」、「環境正義和氣候變化之間的聯繫」、「監管風險和法律：近期 SCOTUS 裁決的影響」。

本次出國計畫主要目的參與國際盛會快速瞭解當前全球風險分析發展現況、新興資訊蒐集、研究趨勢、風險分析方法及其應用知識和認證，作為我國施政及化學物質管理策略依據，並國際交流化學物質風險評估認證制度與教育教材。本局由連珫彣高級環境技術師以及齊慕凡技士參與會議，此趟會議認識出版眾多風險分析書籍大師級學者 Terje Aven 教授，並與 Terje Aven 教授意見交換風險分析教育教材及說明臺灣風險分析教育推動的現況。此外，更遇見前任美國環保署副助理署長 Nancy Beck 博士，並與 Nancy Beck 博士交流化學物質管理政策。

參加國際風險盛會，最大的收穫是熟悉認識國際重量級人物，俾利建立拓展國際合作外，還能短時間內快速汲取當前全球風險分析發展現況，並有機會在世界舞台上彰顯我國環保署毒物及化學物質局的能見度。此趟風險交流學習之旅，對本署風險評估教育教材推動與化學物質管理政策與國際接軌有很大助益。

目錄

一、目的

國際風險分析學會（Society for Risk Analysis 簡稱 SRA）成立於 1980 年，學會成員包含有 2000 多名來自學術界、政府、工業、諮詢業界和非政府組織等多元領域的成員。學會自 1981 年至今出刊「Risk Analysis: An International Journal」，為風險分析領域極具指標性的學術期刊。

SRA 定期在每年 12 月第二周舉辦研討會，2022 年 12 月 4-8 日在美國佛羅里達州坦帕舉辦 SRA 年度會議（SRA Annual Meeting），本次會議主題為「全球風險@臨界點：風險分析和政策推動系統性變革」，旨在促進全球關注的風險問題的對話和教育。今年度會議之主題包括：「全球背景下的系統性風險」、「環境正義和氣候變化之間的聯繫」、「監管風險和法律：近期 SCOTUS（Supreme Court of the United States，美國最高法院）裁決的影響」。

本局 2018 年制定國家化學物質管理政策綱領並奉行政院核定，推動落實我國化學物質之五大管理目標：國家治理、降低風險、管理量能、知識建立與跨境管理，除了從管制面實施降低風險的具體措施，包括：制定食品與民生用品化學物質源頭健康風險相關管控措施、鼓勵民間研發低化學風險製程及減少化學物質排出風險與建立化學物質風險及危害評估機制外，亦致力於風險分析教育知識之推廣與交流。

認識風險分析的精髓，選擇承受的風險，在國家治理與政策制定推動上才能產生突破性的進步。本局持續推動編纂風險分析系列書籍，並透過參加國際風險盛會，快速瞭解當前全球風險分析發展現況、汲取新興資訊、研究趨勢、風險分析方法及其應用知識，特別是借鏡國際以風險為基礎的化學物質管理策略與風險分析教育推行作法，為此趟出國計畫的重要目的。

二、開會議程

會議地點在佛羅里達州坦帕海灣萬豪酒店舉行（圖一），每日會議上午八點半由高達 9 間會議室進行主題式平行口頭演講，至下午五時結束，議程安排相當密集緊湊，也見識國際風險盛會是如此豐富，更吸引各國前來交流與發表。第二天晚上六點至八點會場亦有海報展（圖二）。大會演講要點摘錄：

（一）大會專題演講主題「全球觀點的系統風險」（圖三）

1. 面對全球化後，疫情、區域戰爭等都是一個大系統受區域性干擾傳遞影響整個系統，導致對全世界造成重大影響。

2. 建立模式針對系統（全球）風險進行評估，而系統中的元素，所因應的風險不全是相同(inhomogeneous)，唯有每個組成元素將其承受的風險做適當的控制，甚至能控制降低風險，這個系統才會穩定進而發展。

圖一、大會在坦帕海灣萬豪酒店舉行

圖二、會場晚上進行海報發表

圖三、大會專題演講「全球觀點的系統風險」

（二）大會圓桌會議主題「風險科學(Risk Science)的重要性」（圖四）

1. 討論有哪些風險教育計畫的標竿可以充分涵蓋風險教育核心主題？風險教育核心科目是否仍然合適或有遺漏？在創建風險教育計畫核心主題，在機構中所遇到挑戰？如何克服？如何說服陷入傳統學科思維的專家和政策制定者？

2. 透過教育推動風險科學成為具有強大社會影響力之廣泛認可的科學學門，並強化政策制定者理解、評估、描述、溝通、管理和治理風險的概念、理論、框架、方法、原則和模型的知識。

3. 發起和促進關於風險分析核心主題的討論，並就風險分析研究計畫應涵蓋學科提供指導，例如開設為期兩年的碩士課程。

4. 提供一個平臺，以確定特定風險分析（如風險評估或風險管理）研究計畫的關鍵主題以及風險分析的廣泛概述課程，如安全(safety)和保護(security)內容。

5. 風險教育核心主題：

   (1) 風險分析基本原理：風險分析的定義和概念、風險指標、機率的含意和不確定性機率分布。

   (2) 風險評估：識別風險來源、危害和威脅、估計後果、評估和陳述不確定性。

   (3) 風險感知和溝通：感知風險的決定因素和差異、影響和信任如何影響風險感知、以及如何向公眾、專家和政策制定者傳達風險資訊。

   (4) 風險管理和治理：平衡成本效益和風險、在多維多參與者環境中提供見解、以及接受風險、避免風險、分擔風險和最小化風險。

   (5) 解決真正風險問題和議題：解決風險問題的真實案例研究、達成高品質風險分析具備關鍵要件。

6. 風險分析概念和方法用於幫助做出明智的決策，並查看數據中的模式和模型，這些模式和模型有助於解釋隨機性和不確定性對正在研究的主題或問題得出結論。

7. 隨著風險分析領域和科學的發展，一方面需要權威的指導和解決方案，另一方面需要不斷的爭論、研究和改進。
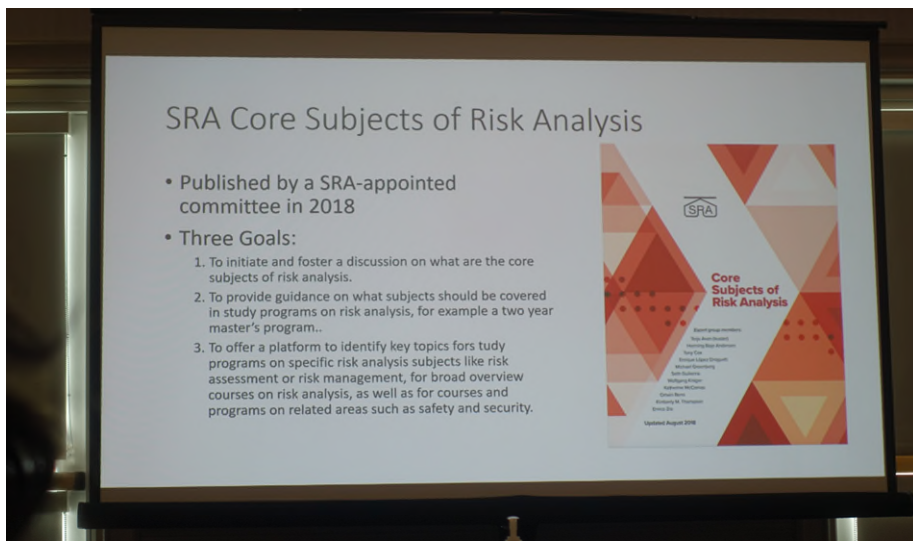
圖四、大會圓桌會議「風險科學(Risk Science)的重要性」

（三）大會主題演講「消費品中苯污染的監管」（圖五）

1. 防曬霜中的苯對健康的危害有多大？新研究發現消費者接觸苯的可能性更高。苯污染是美國消費產品被受關注的問題，已有多項產品如手部清潔用品、防曬產品、氣霧噴霧劑（止汗劑，除臭劑，乾髮洗髮水，抗真菌噴霧劑等）檢測到過量苯。苯屬第一類溶劑，具有不可接受的毒性，不應用於製造原料藥、賦形劑和藥品，但若具有顯著治療藥物產品而不可避免的使用，則應規範標準濃度限值。

2. 苯可以被吸入、攝入或皮膚吸收。苯是原油的天然成分，用於生產塑料、橡膠、藥物、洗滌劑和殺蟲劑。當人們吸入汽車排氣、汽油蒸汽、森林火災煙霧和煙草煙霧時，就會接觸到環境中的苯。

3. 苯是一種已知的人類致癌物質。2021 年美國食品和藥物管理局確認多款防曬霜和除臭劑產品受苯污染，並於正式要求製造商進行苯檢測。

4. 最新的毒理學研究發現，與暴露在環境、工作場所和受污染食品（如香蕉）中苯相比，防曬霜中苯濃度對人類健康影響的可能性更低。毒理學家傾向消費者權衡使用防曬霜和皮膚暴露在致癌紫外線下的好處。

5. 毒理學家研究苯作為防曬霜（噴霧劑和乳液）中的微量污染物暴露對苯的血液濃度可能產生潛在健康影響。就苯而言，關注苯輸送到骨髓引起的健康影響（血液疾病）。研究使用防曬霜可能導致的血液中的潛在濃度，利用苯藥物動力學以及確定的產品使用暴露模型相結合，並假設所有應用於皮膚的苯都穿過皮膚屏障。吸入模型用以評估個人在小型封閉浴室而非室外塗抹防曬霜時的暴露濃度。根據產品中報告的苯濃度，模擬皮膚接觸和吸入接觸，調整吸入率、吸收量以及吸收所需的時間，用以估計有多少苯可以進入血液，研究結果指出使用噴霧或乳液防曬霜後可能進入血液的苯濃度遠低於其他已知的苯暴露如車輛苯排放、食品（如香蕉和可樂）測量苯濃度、以及美國國家職業安全衛生研究所（National Institute for Occupational Safety and Health，簡稱 NIOSH）公告苯工作場所允許限值。

6. 苯暴露對健康潛在影響是基於對長期暴露或更高濃度苯的工人的研究結果，對防曬霜吸收的估計則遠低於防曬霜中測得的濃度。在另一項國際研究報告證實防曬霜中苯的暴露濃度實際上低於吃香蕉的攝入量。

7. 研究發現暴露苯的持續時間對健康的潛在影響至關重要。透過風險評估研究，能明確指出產品中某種化學物質的存在和濃度並不能表明其對健康的潛在影響。相反，重要的是要瞭解使用產品的潛在暴露濃度，以及將其與健康影響相關的暴露濃度和暴露持續時間進行分析。
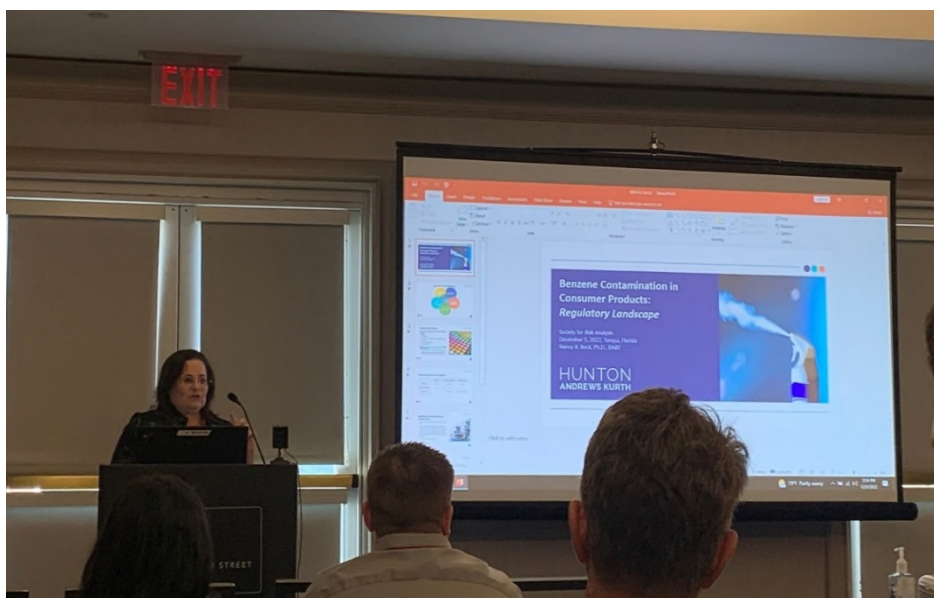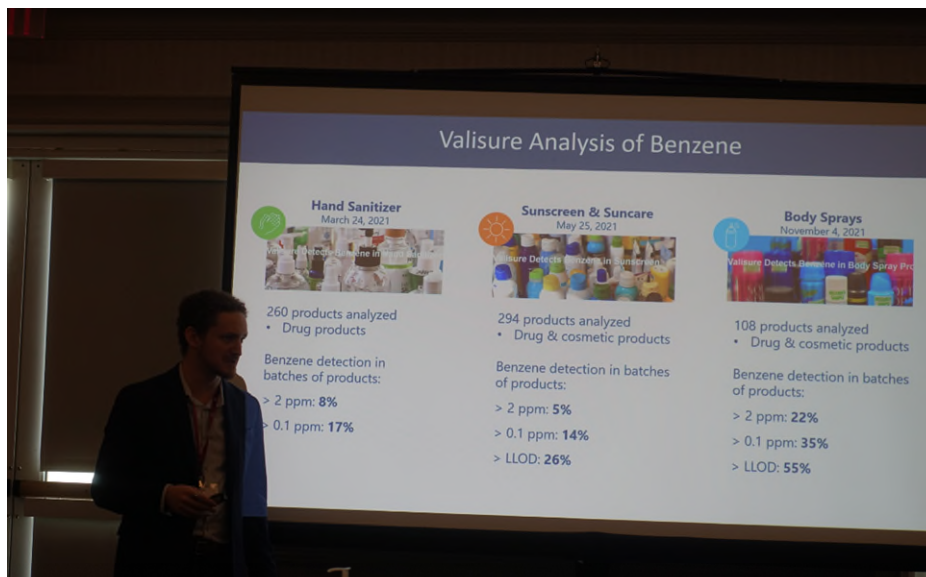
圖五、大會主題演講「消費品中苯污染的監管」

（四）大會主題演講「NIOSH 化學危害袖珍指南」（圖六）

　　彙編化學危害指南更新版本將於 2023 年發布。目前書籍文件和電子版（網站和應用程式） 已完成 677 種化學物質資訊（圖七），內容包括化學物質辨識、職業暴露限值、分析測量方法、 物化特性、反應性、暴露途徑、暴露症狀、影響標的器官、個人防護、急救呼吸器建議以及國際化學品安全卡（圖八）。
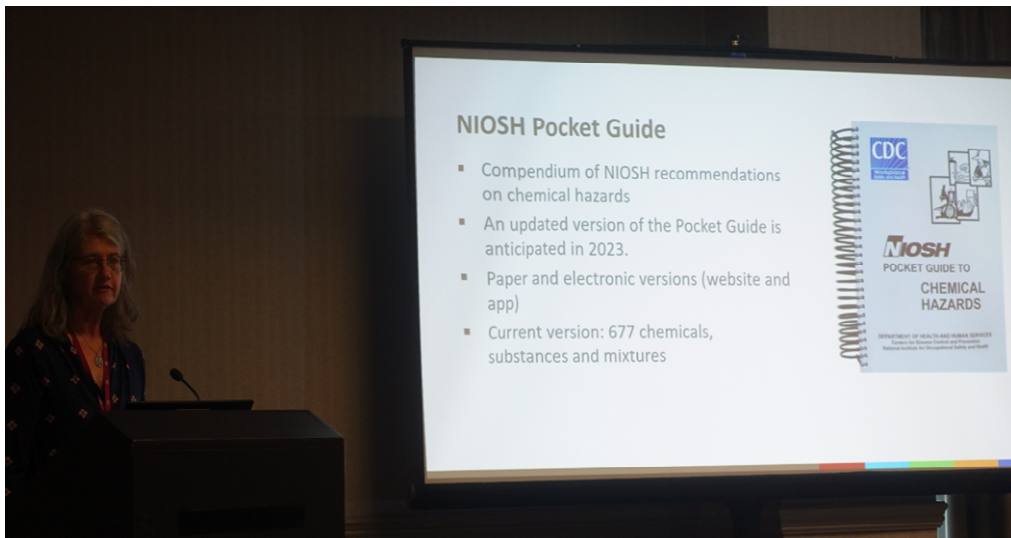
圖六、大會主題演講「NIOSH 化學危害袖珍指南」

圖七、NIOSH 化學危害袖珍指南 APP

Nitrous oxide

Print

SYNONYMS & TRADE NAMES

Dinitrogen monoxide, Hyponitrous acid anhydride, Laughing gas

CAS NO.	RTECS NO.	DOT ID & GUIDE
10024-97-2	QX1350000	1070 122 2201 122(refrigerated liquid)

FORMULA	CONVERSION	IDLH
N_2O	1 ppm = 1.80 mg/m³	N.D. See: IDLH INDEX

EXPOSURE LIMITS

NIOSH REL
TWA 25 ppm (46 mg/m³) (TWA over the time exposed)
[*Note: REL for exposure to waste anesthetic gas.]
OSHA PEL
none

MEASUREMENT METHODS

NIOSH 3800 , 6600;
OSHA ID166
See: NMAM or OSHA Methods

PHYSICAL DESCRIPTION

Colorless gas with a slightly sweet odor. [inhalation anesthetic] [Note: Shipped as a liquefied compressed gas.]

MOLECULAR WEIGHT	BOILING POINT	FREEZING POINT	SOLUBILITY	VAPOR PRESSURE	IONIZATION POTENTIAL
44.0	-127°F	-132°F	(77°F): 0.1%	51.3 atm	12.89 eV
	FLASH POINT	UPPER EXPLOSIVE LIMIT	LOWER EXPLOSIVE LIMIT	RELATIVE GAS DENSITY	
	NA	NA	NA	1.53	

Nonflammable Gas, but supports combustion at elevated temperatures.

INCOMPATIBILITIES & REACTIVITIES

Aluminum, boron, hydrazine, lithium hydride, phosphine, sodium

EXPOSURE ROUTES

Inhalation, skin and/or eye contact (liquid)

SYMPTOMS

dyspnea (breathing difficulty); drowsiness, headache; asphyxia; reproductive effects; liquid: frostbite

TARGET ORGANS

respiratory system, central nervous system, reproductive system

PERSONAL PROTECTION/SANITATION	FIRST AID
(See protection codes) **Skin:**Frostbite **Eyes:**Frostbite **Wash skin:**No recommendation **Remove:**No recommendation **Change:**No recommendation **Provide:**Frostbite wash	(See procedures) **Eye:**Frostbite **Skin:**Frostbite **Breathing:**Fresh air

圖八、NIOSH 化學危害袖珍指南內容（以 N_2O 為例）

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（五）國際盛會與重量級人物意見交流

1. 會場上認識來自挪威 Stavanger 大學 Terje Aven 教授，Terje Aven 教授致力於推動風險分析教育，出版眾多風險分析書籍（圖九），是大師級人物，會中與 Terje Aven 教授交流風險分析教育教材並說明臺灣風險分析教育推動的現況（圖十）。

2. 會場上遇見前任美國環保署副助理署長 Nancy Beck 博士，現在於 Hunton Andrews Kurtz 服務，Nancy Beck 博士專長領域為化學品安全及風險評估相關研究，會中與 Nancy Beck 博士意見交流（圖十一）。Nancy Beck 博士於 111 年 12 月 9 日來信（圖十二）提及化學局在美國華盛頓訪問有很棒的回憶，更十分樂意後續提供化學物質管理政策協助與交流。
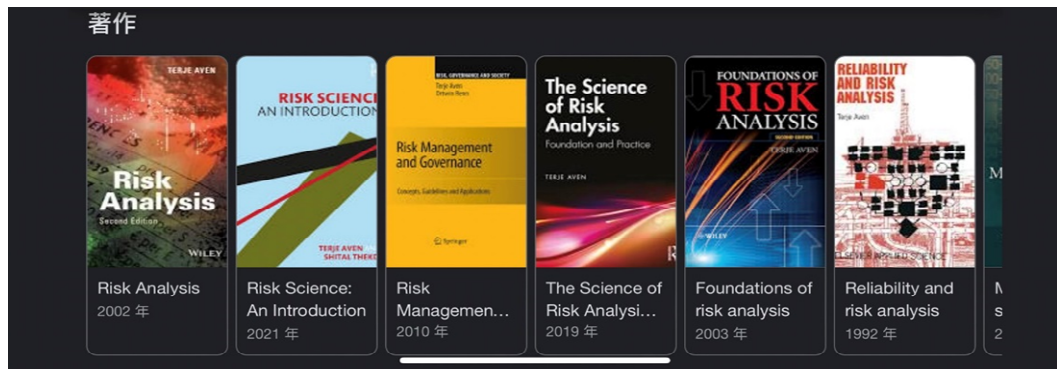
圖九、Terje Aven 教授出版風險分析系列書籍

圖十、連珧彣高級環境技術師與 Terje Aven 教授交流請益
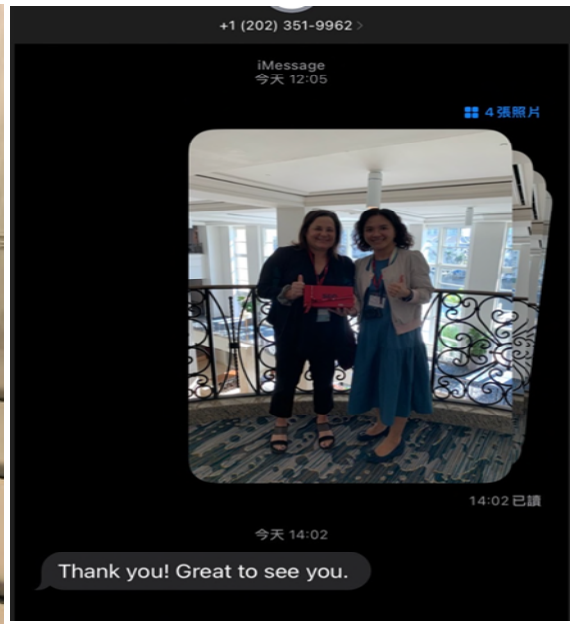
圖十一、連珖彣高級環境技術師與 Nancy Beck 博士合影

Great to see you!

連珖彣 <guangwen.lien@epa.gov.tw>   2022年12月11日 晚上10:16
收件者: "Beck, Nancy" <BeckN@hunton.com>

Dear Dr. Nancy

I have returned to Taiwan today. I am glad to receive the letter and looking forward to more exchanges on chemical management and policy in the future. I will also convey relevant information to Director Hsieh Yein-Rui of TCSB.

Best Regards,
Guang-Wen
****
行政院環境保護署 毒物及化學物質局
綜合規劃組
特約高級環境技術師 連珖彣 博士
電話:02-23257399 #55533
****

Beck, Nancy <BeckN@hunton.com> 於 2022年12月9日 週五 晚上9:47寫道:

Guang-Wen,

It was great to see you again at the SRA meeting in Tampa. Thank you so much for saying hello! I really do miss working with all the great people at the TCSB. I have fond memories of my visits and of the visits that your leadership made to Washington DC. I hope our paths will continue to cross and of course if I can ever be of assistance with any chemicals questions please do reach out to me.

Thank you for the lovely art gift. It is so beautiful and I appreciate your generosity. I hope you enjoyed the rest of your visit to beautiful Florida and I sure do hope our paths will continue to cross.

Warm Regards,

Nancy

Have you seen our Nickel Report Blog? You can subscribe here.

HUNTON
ANDREWS KURTH

Nancy B. Beck, PhD, DABT
Director of Regulatory Science
beckn@HuntonAK.com

圖十二、2022 年 12 月 9 日 Nancy Beck 博士來信

出國行程表如下表：

日　　期	工 作 內 容 概 要
111.12.2-3	啟程，搭機前往美國弗羅里達州坦帕
111.12.4-8	參加 2022 美國風險分析學會年會（圖十三）
111.12.9-11	返程，搭機返回臺灣

圖十三、連珧彣高級環境技術師與齊慕凡技士會場打卡

三、心得與建議

後疫情時代，國際會議已恢復實體模式，依舊吸引來自美國多個州、日本、非洲、芬蘭、法國、中國等國家的政府部門、業界、專家學者、非政府組織、世界衛生組織參與。SRA 提供交換風險分析和風險解決問題的資訊、想法及機會，促進個人和組織之間的理解及專業合作，推動發展風險分析及其相關應用知識，並鼓勵應用風險分析方法來解決實際面臨之種種問題，推進風險分析研究和教育領域的最新進展，有機會參加這樣盛大的國際會議，備感榮幸。

這次會議最大的收穫是認識國際重量級人物 Terje Aven 教授，也遇見前任美國環保署副助理署長 Nancy Beck 博士，俾利建立後續長期國際合作外，各演講者的專業領域涵蓋不同跨學科和多學科分野，藉由不同的觀點來分別詮釋風險分析。本局 108 年及 111 年分別出版風險分析基礎篇(ISBN978-986-5438-04-3)及進階篇(ISBN978-986-5438-64-7)書籍為教育教材（圖十四），並每年開辦風險評估教

育訓練課程，以充實本署暨所屬機關同仁的專業風險評估專業學養及技能。本局未來將持續編纂風險分析系列書籍教材，建議可拓展與 Terje Aven 教授以及 Nancy Beck 博士交流合作，汲取國外風險教育教材以及化學品管理政策成功推行之經驗，例如大會圓桌會議探討「風險科學(Risk Science)的重要性」中提及風險教育核心主題之「解決風險問題的真實案例研究，達成高品質風險分析具備關鍵要件」，是國內編纂書籍較缺乏的內容。對於國際關注之「消費品中苯污染的監管」議題以及「NIOSH 化學危害袖珍指南」資料，建議可納入未來編纂風險分析系列書籍參考資料，並結合國內相關專業組織力量，精進風險分析系列書籍內容，以逐步強健我國專業風險分析知能及實質影響力。
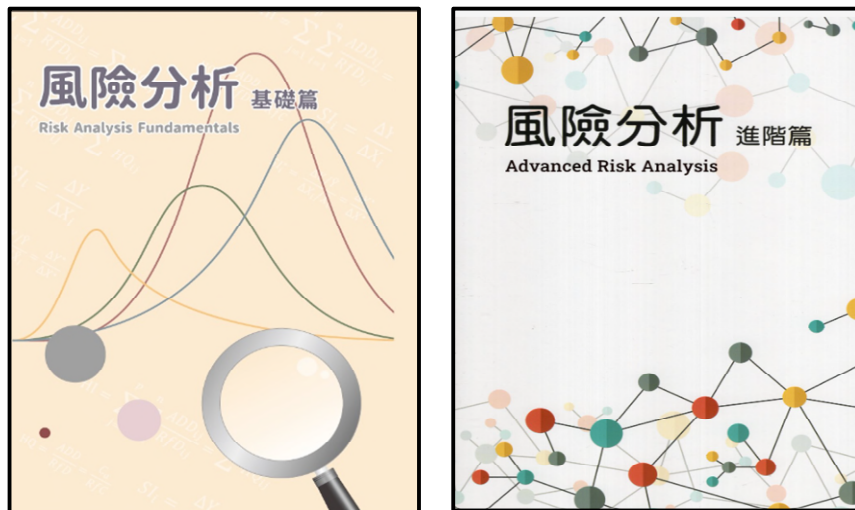
圖十四、108 年出版風險分析基礎篇及 111 年出版風險分析進階篇書籍

四、附錄 （名片及大會議程）

Workshops

8:00 AM – 12:00 PM

Eliciting Judgements from Experts and Non-experts
Frank Hearl

Meeting Room 8 (3rd Floor)

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 nonexperts, 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, and focus groups) 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 way 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.

8:30 AM – 5:30 PM

Approaches to Assessing Environmental Justice: Perspectives from the Scientific, Regulatory and Regulated Communities
Uni Blake, Anna White, Valerie Washington, Amina Wilkins, and Jacqueline Gibson

Meeting Room 10 (3rd Floor)

The environmental justice (EJ) movement arose from community concerns surrounding how people of color and/or low-socioeconomic status have borne the disproportionate impacts of environmental hazards, contributing to disease and health disparities. Risk assessors, risk modelers, and regulatory analysts are tasked with addressing these concerns and finding solutions to address environmental injustice. This workshop explores how the regulators, the scientific community, and the regulated community navigate the complex EJ landscape. The objective of the workshops is to provide practical tools and methods to better equip attendees to implement EJ analysis within their risk assessment, modeling, and regulatory analysis workflows.

This workshop will present a series of three learning modules, each module covering approaches from communities charged with responding to environmental justice:

Module 1: Regulators: Introduction to EJ Tools used by Agencies to identify EJ Communities and support cumulative impact assessments (Instructor – Ann Verwiel)

Module 2: Available Science and Tools for Assessing Cumulative Impacts: Case Studies (Instructors Bill Rish and Ann Verwiel)

Module 3: Regulated Community: Practical Solutions to Identifying Inequities and Responding to EJ Policy (Instructor: Rich Hamel)

1:00 PM – 5:00 PM

Risk Analysis Quality Test (RAQT) and Two Applications to Microbial Risk Analysis
Peg Coleman, John Lathrop, and Rob Waller

Meeting Room 8 (3rd Floor)

The Applied Risk Management Specialty Group (ARMSG), led by John Lathrop and Robert Waller, partnered with risk practitioners spanning the full spectrum of risk analysis topics from assessment to communication, management, and governance to develop a unique tool, the Risk Analysis Quality Test (RAQT) of the Society for Risk Analysis. The RAQT arose from the experience of diverse risk practitioners with pitfalls and shortcomings of risk analyses as applied to decision making. RAQT includes a comprehensive battery of 76 'experienced-pitfall-based' questions. The tool can be used to generate a report that can be shared with colleagues, critics, and external reviewers. Reports generated from the RAQT beta testing are offered for deliberation and reflection, consistent with the goal of creating a culture of quality analysis, full disclosure, and detailed consideration of shortfalls as opportunities to improve risk analysis processes. The architects of the RAQT will introduce it to workshop participants. Two other SRA leaders will present a report from application of the tool to two historical microbial risk assessments and engage in deliberations with participants in light of 21st century risk science.

Keynote Sessions

Monday, December 5

8:30 AM – 10:00 AM

Systemic Risks in a Global Context
Grand Ballroom Salon E-J (2nd Floor)

Pandemics, climate change, the water-food-energy nexus: Understanding and managing systemic risk is more important than ever due to our immense global connectivity, whether between sectors, countries and continents, or even between individuals. Systemic risk is associated with cascading impacts that spread within and across systems and sectors (e.g. ecosystems, health, infrastructure, the food and energy sectors) via the movements of people, goods, capital and information within and across boundaries (e.g. regions, countries and continents). Addressing contemporary challenges in terms of systemic risk requires integrating different systems perspectives and fostering system thinking, while implementing key intergovernmental agendas, such as the Paris Agreement, the Sendai Framework for Disaster Risk Reduction and the Sustainable Development Goals.

This interactive panel examines perspectives of climate, environmental and disaster risk science and practice regarding systemic risk. The panellists address issues such as information and data requirements that are essential for a better and more actionable understanding of the systemic nature of risk, the opportunities to connect research and policy for addressing systemic risk as well as recommendations for future work in science, policy and practice on systemic risk. A point of departure for the discussion is the briefing note on systemic risk by the International Science Council, UNDRR, and Risk-KAN Working Groups.

Monderator
Pia-Johanna Schweizer

Panel
Jessica Boakye, Sirkku Juhola, Kai Kornhuber, Nidhi Nagabhatla

Tuesday, December 6

12:00 PM - 1:30 PM

Linkages Across Cumulative Risk, Environmental Justice and Climate Change
Grand Ballroom Salon E-J (2nd Floor)

There is a lot of discussion around cumulative risk assessment frameworks, environmental justice issues in overburdened communities, and the implications of climate change across communities. Cumulative risk is a function of the combined effects of exposure to multiple contaminants from multiple sources and the interaction of those exposures with social and other factors in the community. In already overburdened communities, cumulative risk can be much higher as social determinants of health interact with other kinds of exposures, and the impacts of climate change in many cases felt more acutely. This interactive panel discussion will talk through these issues with reference to recently proposed EPA cumulative risk guidance, environmental justice efforts, and a recent National Academies panel on the same topic. In addition, panelists will provide perspectives from other agencies, risk practitioners looking to implement regulatory guidelines, and researchers who are trying to better understand these kinds of interrelationships.

Monderator
Katherine von Stackelberg

Panel
Christopher Frey, Felicia Wu

Wednesday, December 7

12:00 PM - 1:30 PM

Risk Regulation and the Law: Implications of Recent SCOTUS Rulings and Luncheon
Grand Ballroom Salon E-J (2nd Floor)

Recent decisions by the Supreme Court have constrained risk regulation, climate policy and environmental law in the United States. The Court has relied on the major questions doctrine, and nodded toward the nondelegation doctrine. Meanwhile, lower courts have seen litigation over the social cost of carbon. How will these judicial decisions affect risk regulation? Join us for a discussion with legal experts on these issues.

Monderator
Jonathan B. Wiener

Panel
Elissa Philip Gentry, Jonathan H. Adler

7:00 AM-8:00 AM	New Member, Student/Young Professional Breakfast, *Terrace Room (1st Floor)*
8:30 AM-10:00 AM	Keynote Session – Systemic Risks in a Global Context, *Grand Ballroom Salon E-J (2nd Floor)*
10:00 AM-10:30 AM	Coffee Break

	Grand Ballroom Salon A (2nd Floor)	Grand Ballroom Salon B (2nd Floor)	Grand Ballroom Salon C (2nd Floor)	Grand Ballroom Salon D (2nd Floor)
10:30 AM – 12:00 PM	M2-A: Symposium: Closing Risk Perception Gaps: Insights from Cross-National Perspective	M2-B: Infrastructure Risk, Resilience, and Natural Hazards	M2-C: Symposium: Advances in Disaster Research for Infrastructure, Capabilities, and Objectives	M2-D : Poster Platform: COVID-19
12:00 PM – 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, Policy & Law (RPLSG), Security & Defense (SDSG), Resilience Analysis (RASG), Ecological Risk Assessment (ERASG), Foundational Issues in Risk Analysis (FRASG) 12:50 PM-1:25 PM - Exposure Assessment (EASG), Risk Communication (RCSG), Applied Risk Management (ARMSG), Decision Analysis and Risk (DARSG), Advanced Materials and Technologies (AMTSG), Justice, Equity and Risk (JERSG), Engineering & Infrastructure (EISG), Microbial Risk Analysis (MRASG)			
1:30 PM-3:00 PM	M3-A: Resilience Against Emerging and Extreme Threats	M3-B: Misinformation & the Politicization of Risk	M3-C: Global Systemic Risks and Polycrises in the Anthropocene	M3-D: Poster Platform: Information Processing

| 3:00 PM-3:30 AM | Coffee Break |

	Grand Ballroom Salon A	Grand Ballroom Salon B	Grand Ballroom Salon C	Grand Ballroom Salon D
3:30 PM - 5:00 PM	M4-A: Risk Assessment at Scale for Critical Infrastructure	M4-B: Natural Hazards	M4-C: Risks from Extreme Storm Events	M4-D: Poster Platform: Advanced Topics in Risk Analysis

| 6:00 PM-8:00 PM | Poster Reception, *Grand Ballroom Salon E-J (2nd Floor)* |

7:00 AM-8:00 AM	**New Member, Student/Young Professional Breakfast**, *Terrace Room (1st Floor)*
8:30 AM-10:00 AM	**Keynote Session** – Systemic Risks in a Global Context, *Grand Ballroom Salon E-J (2nd Floor)*
10:00 AM-10:30 AM	**Coffee Break**

	Meeting Room 8 (3rd Floor)	Meeting Room 9 (3rd Floor)	Meeting Room 10 (3rd Floor)	Meeting Room 11 (3rd Floor)
10:30 AM – 12:00 PM	M2-E: Symposium: Managing Risk from Megafires	M2-F: Symposium: Managing Risk from Megafires	M2-G: Considering Solar Geoengineering to Address Climate Change: Risk Tradeoffs, International Governance, and Comparisons with Other Emerging Technologies	M2-H: Risk Science: How Can We Make it a Broadly Recognized Science with Strong Societal Impact through Educational Programs
12:00 PM – 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, Policy & Law (RPLSG), Security & Defense (SDSG), Resilience Analysis (RASG), Ecological Risk Assessment (ERASG), Foundational Issues in Risk Analysis (FRASG) 12:50 PM-1:25 PM - Exposure Assessment (EASG), Risk Communication (RCSG), Applied Risk Management (ARMSG), Decision Analysis and Risk (DARSG), Advanced Materials and Technologies (AMTSG), Justice, Equity and Risk (JERSG), Engineering & Infrastructure (EISG), Microbial Risk Analysis (MRASG)			
1:30 PM-3:00 PM	M3-E: Wildfire Risk Analysis	M3-F: Cybersecurity, Digital Environment & Web3.0	M3-G: The Social Cost of Carbon on Trial: What Comes Next?	M3-H: Evaluating Cumulative Risk from Mixed Stressor Exposures

3:00 PM-3:30 AM	**Coffee Break**

	Meeting Room 8	Meeting Room 9	Meeting Room 10	Meeting Room 11
3:30 PM-5:00 PM	M4-E: Public Responses to Climate Change Risks	M4-F: Cybersecurity	M4-G: Salmonella, Pork, and the Critical Role of Analysis and Data to Inform Decision-Making and Metrics Development	M4-H: Symposium: Benzene Contamination in Consumer Products: Exposures and Implications for Human Health and The Environment

6:00 PM-8:00 PM	**Poster Reception**, *Grand Ballroom Salon E-J (2nd Floor)*

	Grand Ballroom Salon A (2nd Floor)	Grand Ballroom Salon B (2nd Floor)	Grand Ballroom Salon C (2nd Floor)	Grand Ballroom Salon D (2nd Floor)
8:30 AM-10:30 AM	T1-A: Towards Enhancing Power Grid Resilience under Climate Change and Extreme Weather Events	T1-B: Risk of the Year	T1-C: Symposium: Management of Security and Safety Risks: A Cost and Benefits Perspective	T1-D: How Low Can You Go? Examining the Basis, Reliability, and Interpretation of Continuous Dose-Response Projected to Low Exposures for Noncancer Endpoints
10:00 AM-10:30 AM	**Coffee Break**			
10:30 AM – 12:00 PM	T2-A: Adaptation Planning of Engineered Systems for Climate Change	T2-B: COVID-19 Vaccine Information and Decision-Making for At-Risk and Equity-Deserving Populations	T2-C: SRA/MORS Collaboration in U.S. National Security Risk Analysis Challenges	T2-D: Communicating Disease Risk
12:00 PM – 1:30 PM	**Keynote Session** – Linkages Across Cumulative Risk, Environmental Justice and Climate Change, *Grand Ballroom Salon E-J (2nd Floor)*			
1:30 PM-3:00 PM	T3-A: Symposium: Sustainability, Resilience, Engineering, and Environmental Justice	T3-B: Symposium: Resilience of Energy Systems	T3-C: Roundtable: The Future of Risk Research for Homeland Security	T3-D: Risk Perception & Information Processing
3:00 PM-3:30 AM	**Coffee Break**			
3:30 PM-5:00 PM	T4-A: Roundtable: Incorporating Risk Equity into the Distribution of New Federal Infrastructure Funding	T4-B: Symposium: Enhanced Geothermal Energy: New Research Findings and Implications for Renewable Energy Acceptance	T4-C: Symposium: Risk Informed Decision and Benefit Analysis in Cybersecurity	T4-D: Risk and Human Factors Impacting Assessment
6:00 PM-8:00 PM	**Specialty Group Mixers**, *see page 5*			

Tuesday

	Meeting Room 8 (3rd Floor)	Meeting Room 9 (3rd Floor)	Meeting Room 10 (3rd Floor)	Meeting Room 11 (3rd Floor)	Meeting Room 5 (2nd Floor)
8:30 AM–10:30 AM	T1-E: Another Natural Hazards Session	T1-F: Supply Chain & Cyber Risks	T1-G: Evaluating Risks of Novel Food and Agriculture Technologies through Interdisciplinary Approaches	T1-H: Risk Analysis of Emerging Advanced Materials and Technologies	T1-I: SRA's Risk Analysis Quality Test: 3 Surprise Spinoff Insights and How to Apply Them
10:00 AM-10:30 AM	**Coffee Break**				
10:30 AM – 12:00 PM	T2-E: Roundtable: Role of Occupational Exposure Assessments Under Amended TSCA Risk Evaluations	T2-F: Symposium: Resilient Supply Chains: Methodology and Applications in California and Florida Transportation Systems	T2-G: Roundtable: Cultured Meat and Alternative Protein Safety: Key Questions and Perspectives	T2-H: Symposium: New Approaches to Measure Perceptions and Decision-Making Regarding Risks and Rechnologies: A Methodological Exchange	T2-I: Roundtable: Risk Analysis Quality Test (RAQT) Applications to Microbial Risk Analysis
12:00 PM – 1:30 PM	**Keynote Session** – Linkages Across Cumulative Risk, Environmental Justice and Climate Change, *Grand Ballroom Salon E-J (2nd Floor)*				
1:30 PM-3:00 PM	T3-E: Risk Perception & Information Processing	T3-F: Symposium: Current Supply-Chain Risks and Impacts	T3-G: Foodborne Illness & Microbial Risk Modeling	T3-H: Wastewater and Water Quality	T3-I: Lightning Session: Risk Communication/Perception
3:00 PM-3:30 AM	**Coffee Break**				
3:30 PM-5:00 PM	T4-E: Climate Change Adaptation and Resilience	T4-F: Roundtable: In Memory of Dr. Sharon Dunwoody - Research Based on the RISP Model	T4-G: Innovative Approaches in Food Safety Risk Management	T4-H: Symposium: Risk Analysis for Arctic Systems	T4-I: Lightning Session: Emerging Topics in Risk, Engineering, and Public Policy
6:00 PM-7:30 PM	**Specialty Group Mixers**, *see page 5*				

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Wednesday

	Grand Ballroom Salon A (2nd Floor)	Grand Ballroom Salon B (2nd Floor)	Grand Ballroom Salon C (2nd Floor)	Grand Ballroom Salon D (2nd Floor)
8:30 AM-10:30 AM	W1-A: Public Engagement: COVID and other Air Contaminants	W1-B: US Risk Policy: Climate, Covid and Other Risks	W1-C: Roundtable: ESG Tipping Point and Transforming Risk Decision Making	W1-D: Life Expectancies and Valuing Health Risks
10:00 AM-10:30 AM	**Coffee Break**			
10:30 AM – 12:00 PM	W2-A: Risk Tradeoffs in Policy and Technology	W2-B: Roundtable: Why We Need an SRA Chapter for the MENA Region	W2-C: Decision-making for Climate Change Adaptation	W2-D: Chemicals and Human Health Risks
12:00 PM – 1:30 PM	**Keynote Session** – Risk Regulation and the Law: Implications of Recent SCOTUS Rulings and Luncheon, *Grand Ballroom Salon E-J (2nd Floor)*			
1:30 PM-3:00 PM	W3-A: Roundtable: Major Questions at the Supreme Court: Implications for Risk Analysis	W3-B: Applied Risk Analysis & Management	W3-C: Critical Infrastructure Risk and Resilience	W3-D: Artificial Intelligence
3:00 PM-3:30 AM	**Coffee Break**			
3:30 PM-5:00 PM	W4-A: Roundtable: Is There Something Else the Governments Could do to Improve their Communication with the Civil Society when Communicating about an Emerging Technology?	W4-B: Roundtable: Risk Science Perspectives on Information, Misinformation and Disinformation	W4-C: Natural Hazards and Infrastructure	

Wednesday

	Meeting Room 8 (3rd Floor)	Meeting Room 9 (3rd Floor)	Meeting Room 10 (3rd Floor)
8:30 AM-10:30 AM	W1-E: Roundtable: Public Health Risk Modelling & Communication in the time of COVID-19: What went right and what went wrong?	W1-F: Plastics, Synthetic Biology, Polymers, and Combustion	W1-G: Symposium: The Role of Risk Assessment and Benefit-Cost Analysis of Food Traceability
10:00 AM-10:30 AM	**Coffee Break**		
10:30 AM – 12:00 PM	W2-E: Roundtable: Convergence and Collaboration: A Conversation on the Role of Risk Communication in Transdisciplinary Research and Practice	W2-F: Submarines, Satellites, Pipelines and Risks of Big Projects	W2-G: Symposium: Food Safety Risks, Disease Burden, and Technological and Behavioral Solutions
12:00 PM – 1:30 PM	**Keynote Session** – Risk Regulation and the Law: Implications of Recent SCOTUS Rulings and Luncheon, *Grand Ballroom Salon E-J (2nd Floor)*		
1:30 PM-3:00 PM	W3-E: Risk Governance and Community Resilience	W3-F: Microbes, The Environment, and Engineered Systems	W3-G: Symposium: Food Safety Risk Communication ñ Introducing The APEC Food Safety Risk Communication Framework and Associated Guidelines
3:00 PM-3:30 AM	**Coffee Break**		
3:30 PM-5:00 PM	W4-E: Informing Exposure: PFAS and other Chemicals	W4-F: Symposium: Emerging Risks and Consumer Products	

Technical Program

10:30 AM – 12:00 PM

M2-A: Symposium: Closing Risk Perception Gaps: Insights from Cross-National Perspective

Grand Ballroom Salon A (2nd Floor)

Chair: Catherine Wong

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

Public perceptions of nuclear energy in relation to climate change in China

Catherine Wong
University of Amsterdam

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

Do They See the Same Risks? Gaps between Engineers and the Ethics Community on AI Ethics

Cornelius Kalenzi
KAIST

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

Social Perception of Systemic Risk

Pia-Johanna Schweizer
Institute for Advanced Sustainability Studies

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

A Conceptual Framework and Research Agenda for Risk Perception Gaps

Leonard Lee
National University of Singapore

10:30 AM – 12:00 PM

M2-B: Infrastructure Risk, Resilience, and Natural Hazards

Grand Ballroom Salon B (2nd Floor)

Chair: TBD

10:30 am   **M2-B.1**

Surprise is inevitable: How do we train and prepare to make our critical infrastructure more resilient?

David Alderson
Naval Postgraduate School

10:50 am   **M2-B.2**

Assessing Exposure of Healthcare Facilities and Emergency Management Critical Infrastructure to Flooding Across Canada

Liton Chakraborty
University of Waterloo

11:10 am   **M2-B.3**

Evaluating the Risk and Complexity of Pluvial Flood Damage in the U.S.

Gina Tonn
Verdantas

11:30 am   **M2-B.4**

Cell phone data for quantifying disaster recovery

Tessa Swanson
University of Michigan

10:30 AM – 12:10 PM

M2-C: Symposium: Advances in Disaster Research for Infrastructure, Capabilities, and Objectives

Grand Ballroom Salon C (2nd Floor)

Chair: Cameron MacKenzie

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

A Bayesian approach to reconstructing interdependent infrastructure networks

Hiba Baroud
Vanderbilt University

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

Assessing interdependency among capabilities for emergency preparedness

Matthew Gabriel
Iowa State University

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

Assessing Goals and Objectives for Emergency Preparedness

Curtis Peters
Iowa State University

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

Retrieving and disseminating information about disasters through natural language processing tools

Parastoo Akbari
Iowa State University

11:50 am   **M2-C.5**

Towards advancing disaster preparedness: a data-driven spatiotemporal analysis to forecast mobility patterns at critical facilities

Zhiyuan Wei
University at Buffalo

10:30 AM – 12:00 PM

M2-D: Poster Platform: COVID-19

Grand Ballroom Salon D (2nd Floor)

Chair: Margȕt Kuttschreuter

10:30 am   **M2-D.1**

Examining predictors of COVID-19 vaccine hesitancy to promote vaccination

Nagwan Zahry
The University of Tennessee-Chattanooga

10:35 am   **M2-D.2**

A retrospective assessment of COVID-19 model performance in the US

Kyle Colonna
Harvard University

10:40 am   **M2-D.3**

Public discussion of secondary risks related to covid-19 vaccines: what can we learn from the pause of J&J vaccine?

Yeqing Kong
University of North Carolina Wilmington

10:45 am   **M2-D.4**

Predicting vaccination intentions for COVID-19, HPV, and monkeypox

Haoran Chu
University of Florida

Technical Program

10:30 AM – 12:00 PM	10:30 AM – 12:00 PM	10:30 AM – 12:10 PM	10:30 AM – 12:00 PM

M2-E: Symposium: Managing Risk from Megafires
Meeting Room 8 (3rd Floor)
Chair: Alison Cullen

10:30 am   **M2-E.1**
International cooperation for managing wildfire risk
Sunniva Bloem
University of Washington

10:50 am   **M2-E.2**
Risk Management Through Megafire Response
Alison Cullen
University of Washington

11:10 am   **M2-E.3**
Fire Weather Forecasting in the Pacific Northwest
Reed Humphrey
University of Washington

11:30 am   **M2-E.4**
Optimizing and Managing Prescribed Fire Usage in Mitigating Wildfires
Jun Zhuang
University at Buffalo

M2-F: Symposium: Resilience in Cyber-Energy Systems
Meeting Room 9 (3rd Floor)
Chair: Igor Linkov

10:30 am   **M2-F.1**
Edge Computing and Resilience
Fiondella
ERDC

10:50 am   **M2-F.2**
Simulation of infrastructure resilience at military installations using Framework Integrating the Complexity of Uncertain Systems (FICUS)
Luke Hogewood
US Army Engineer Research and Development Center

11:10 am   **M2-F.3**
Developing Reference Building Types for Risk Management in Non-Traditional Building Types
Andrew Jin
University of Southern California

11:30 am   **M2-F.4**
Edge Computing Platform for Resilient Installations
Karen Fleckner
Artesion Inc

M2-G: Considering Solar Geoengineering to Address Climate Change: Risk Tradeoffs, International Governance, and Comparisons with Other Emerging Technologies
Meeting Room 10 (3rd Floor)
Chair: Tyler Felgenhauer

10:30 am   **M2-G.1**
Solar radiation modification: A risk-risk analysis
Jonathan Wiener
Duke University

10:50 am   **M2-G.2**
Does solar geoengineering crowd-out mitigation? Lessons from recent experiments
Todd Cherry
University of Wyoming

11:10 am   **M2-G.3**
Bi-directional learning for risk governance of solar geoengineering and gene drives: A comparison of technological and governance features across two emerging technologies
Khara Grieger
North Carolina State University

11:30 am   **M2-G.4**
The effect of exclusivity and inclusivity on the international response to potentially harmful unilateral action: An application to solar geoengineering
Mark Borsuk
Duke University

11:50 am   **M2-G.5**
Prevent, then manage: Governing the free driver incentive for solar geoengineering deployment
Tyler Felgenhauer
Duke University

M2-H: Roundtable: Risk Science: How Can We Make it a Broadly Recognized Science with Strong Societal Impact through Educational Programs
Meeting Room 11 (3rd Floor)
Chair: Seth Guikema

The SRA vision is to be "the world's leading authority on risk science and its applications." This vision acknowledges that risk science exists as a distinct science and it is important to provide authority in relation to this science. The SRA strategic plan, which supports the vision, highlights the need for enhancing risk science and the profession. These high-level goals can be interpreted as a recognition of the importance of strengthening risk science.

The scope of risk science covers concepts, principles, approaches, methods, and models for understanding, assessing, characterizing, communicating, and managing risk. As a field and discipline, risk analysis includes all relevant study programs, researchers, journals, scientific conferences, societies, and so on.

Study programs and their curriculum play an important role in shaping and developing both risk science and its practitioners. SRA and other risk organizations can provide essential support for such initiatives, by providing essential documents and guidance on risk science, covering for example key subjects of risk science, fundamental principles, and suggestions for educational material.

Panelists
- Ragnar Lofstedt
- Terje Aven
- Tom Logan

1:30 PM – 3:00 PM

M3-A: Resilience Against Emerging and Extreme Threats
Grand Ballroom Salon A (2nd Floor)
Chair: Aleksandar JOVANOVIC

1:30 pm — M3-A.1
New insurance solutions for enhancing disaster resilience against climate change related and natural extreme threats (XTs)
Aleksandar Jovanovic
Steinbeis EU-VRi

1:50 pm — M3-A.2
Interdependencies in energy systems
Giovanni Sansavini
ETH Zurich

2:10 pm — M3-A.3
Systemic risks as possible extreme threats: health care
Peter Klimek
Medical University Vienna, Austria

2:30 pm — M3-A.4
Dynamic and self-generated model of interdependencies in complex system: critical infrastructures and supply chains
Marjan Jelic
Steinbeis EU-VRi

1:30 PM – 3:00 PM

M3-B: Misinformation & the Politicization of Risk
Grand Ballroom Salon B (2nd Floor)
Chair: Laura Rickard

1:30 pm — M3-B.1
Inoculation against fake news on COVID-19 vaccines: A replication study in Singapore
Catherine Wong
University of Amsterdam

1:50 pm — M3-B.2
Examining the effects of communicator bias on sharing intention in aggressive misinformation and correction about climate change
Shupei Yuan
Northern Illinois University

2:10 pm — M3-B.3
Understanding support for aquaculture policy: The role of information exposure, information seeking, and source credibility
Laura Rickard
University of Maine

2:30 pm — M3-B.4
Pathways underlying the COVID-19 vaccine political divide: A health behavior theory perspective
Christopher Clarke
George Mason University

1:30 PM – 3:00 PM

M3-C: Global Systemic Risks and Polycrises in the Anthropocene
Grand Ballroom Salon C (2nd Floor)
Chair: Pia-Johanna Schweizer

The critical challenge facing humanity is the increasingly urgent need to find and implement pathways to sustainable futures with equity and justice. While humans living in Earth's environment on which survival of all forms of life depends have been subject to disasters and faced crises at global to local spatial scales and temporal scales from immediate to long-term threats to future generations, a new type of risks, called systemic risks, are now increasingly acute and potentially irreversible with disastrous consequences leading to simultaneous polycrises. They include, e.g., the COVID-19 pandemic, food security, shifting geopolitics and war, climate change impacts, transgression of planetary boundaries, and systemic inequity and injustice.

Polycrises arise from complex interconnections and multiple feedbacks in global systems; their frequency and severity appear to be rising, because society is subject to a range of increasingly powerful stresses. These stresses appear to be emerging slowly, but evidence suggests they are approaching tipping points that could cause disasters and even widespread system breakdown. Also, physical and social stresses are causally interacting in ways that could multiply their overall impact on human well-being, producing global repercussions that sharply and irreversibly degrade humanity's prospects. To date, political, economic, institutional, and policy responses have been radically insufficient to reduce this risk. Polycrises are a consequence of system interaction and mutual dependencies leading to multiple cascading effects and amplification cycles.

Panelists
- Thomas Homer-Dixon
- Mariko Nishizawa
- Ortwin Renn
- Johan Rockström
- Catherine Wong

1:30 PM – 3:00 PM

M3-D: Poster Platform: Information Processing
Grand Ballroom Salon D (2nd Floor)
Chair: Xinxia Dong

1:30 pm — M3-D.1
More insufficient or more capable? Predicting risk information seeking and processing related to PFAS contamination
Xinxia Dong
University at Buffalo

1:40 pm — M3-D.3
Operationalizing the heuristic-systematic model in communication studies: a narrative review
Yidi Wang
University of Georgia

1:55 pm — M3-D.4
An assessment of expert risk perceptions of motor insurance fraud in Nigeria
Olatokunbo Shoyemi
University of Southampton

2:00 pm — M3-D.5
Eye-tracking Laypersons During a Nevus Identification Task: ABCDE Yields Increased Sensitivity but Reduced Visual Processing Efficiency
Kevin John
Brigham Young University

2:05 pm — M3-D.6
Actively open-minded thinking and liberal political orientation predict enhanced immunity to pandemic fake news stories: a signal detection approach
Richard John
University of Southern California

2:10 pm — M3-D.7
Understanding motivation and risk perception of cryptoassets users
Thierry Warin
HEC Montréal

3:30 PM – 5:10 PM	3:30 PM – 5:10 PM	3:30 PM – 5:10 PM	3:30 PM – 5:00 PM

M4-A: Risk Assessment at Scale for Critical Infrastructure
Grand Ballroom Salon A (2nd Floor)
Chair: Jason Reinhardt

3:30 pm   M4-A.1
Risk Assessment at Scale for Critical Infrastructure ñ NRMC Vision
Merideth Secor
Cybersecurity and Infrastrcuture Security Agency

3:50 pm   M4-A.2
Generation and Application of NCF Data Network Layers for Risk Analysis via Functional Decomposition
Laura Weinstock
Sandia National Laboratories

4:10 pm   M4-A.3
From Functions to Assets: developing a generalized risk assessment methodology for application with the National Critical Functions
Chel Samuels
Lawrence Livermore National Laboratory

4:30 pm   M4-A.4
Application of a functional dependency modeling framework within the Risk Architecture
Rob Edsall
Idaho National Laboratory

4:50 pm   M4-A.5
A Network-of-Networks Framework for Analyzing Functions-Based Critical Infrastructure Risk and Resilience
Samrat Chatterjee
Pacific Northwest National Laboratory

M4-B: Natural Hazards
Grand Ballroom Salon B (2nd Floor)
Chair: Sergio García Mejía

3:30 pm   M4-B.1
A culture of fire: identifying community risk perceptions surrounding prescribed burning in the Flint Hills, Kansas
Zoey Rosen
Colorado State University

3:50 pm   M4-B.2
Risk communication about wildfire smoke exposure in the U.S.
Andrew Fox
University of Oklahoma

4:10 pm   M4-B.3
Scaling-up local adaptation: Results from an initial survey of local practitioners managing climate risks in the U.S. Gulf Coast, 2020-2022
Natalie Herbert
Stanford University

4:30 pm   M4-B.4
Emergency Communication Strategies During "Back to Back" Tropical Cyclones Eta and Iota
Sergio García Mejía
University of Maryland

4:50 pm   M4-B.5
Social and Economic Disparity in Isolation Risk due to Sea Level Rise in the United States
Kelsea Best
University of Maryland

M4-C: Risks from Extreme Storm Events
Grand Ballroom Salon C (2nd Floor)
Chair: Tom Logan

3:30 pm   M4-C.1
Comparing the Performance of Alternative Power Arrays During Extreme Weather Events
Yicheng Wang
Rensselaer Polytechnic Institute

3:50 pm   M4-C.2
S158 in S157 - Isolation: Revising the estimated risk of sea-level rise
Tom Logan
University of Canterbury

4:10 pm   M4-C.3
Cross-sectoral and multiscalar exposure assessment of California airports to future coastal flooding to advance climate adaptation policy
Sarah Lindbergh
UC Berkeley

4:30 pm   M4-C.4
Direct policy search for a risk-based levee design framework
Jingya Wang
Purdue University

4:50 pm   M4-C.5
Agent-based modeling of resident flood-hazard relocation decisions with buyouts or relocation subsidies
Vicki Bier
University of Wisconsin-Madison

M4-D: Poster Platform: Advanced Topics in Risk Analysis
Grand Ballroom Salon D (2nd Floor)
Chair: Jun Zhuang

3:30 pm   M4-D.2
A Game-theoretic Framework for Multi-target, Multi-layer Defense against Strategic Attackers
Ian Unson
University at Buffalo

3:35 pm   M4-D.3
Confidence In = Confidence Out
Alexander Wimbush
University of Liverpool

3:50 pm   M4-D.4
Risk Screening of Phosphorus (P) Capturing Materials for Eutrophication Control: Environmental Impacts and Sustainable Management
Mumtahina Riza
North Carolina State University

3:55 pm   M4-D.5
Water quality and exposure to enteric pathogens, inorganic chemicals, & health outcomes in central Appalachia
Md Rasheduzzaman
Virginia Polytechnic Institute and State University

4:00 pm   M4-D.6
Forecast value for risk averse decision-makers
Luca Anna Palasti
University of Colorado Boulder

4:05 pm   M4-D.7
Mapping sense of place for storm surge: map features and sense of place in storm surge risk perceptions and protective actions
Hugh Walpole
National Center for Atmospheric Research

4:10 am   M4-D.8
Downstream impacts of oral poliovirus vaccination: a quantitative microbial risk assessment
Madeline Lewis
Ohio State University College of Public Health

3:30 PM – 5:10 PM

M4-E: Public Responses to Climate Change Risks
Meeting Room 8 (3rd Floor)
Chair: Dana Garfin

3:30 pm   **M4-E.1**
Carbon Dependency, Social Capital, Political Orientation, and American Public Response to Climate Change
Feng Hao
University of South Florida

3:50 pm   **M4-E.2**
The impact of extreme precipitation events and their variability on climate change beliefs
Mikhaila Calice
University of Wisconsin-Madison

4:10 pm   **M4-E.3**
Increased polarization in public view on climate change after exposure to natural hazards
Haoran Chu
University of Florida

4:30 pm   **M4-E.4**
Concerned, but am I engaged? Identifying predictors of climate action among Americans who perceive climate change to be a high risk
Yema Conteh
University of Southern California

4:50 pm   **M4-E.5**
Negative hazard experiences, climate anxiety, PTSD, and pro-environmental action and attitudes
Dana Garfin
University of California, Los Angeles

3:30 PM – 5:10 PM

M4-F: Cybersecurity
Meeting Room 9 (3rd Floor)
Chair: Maksim Kitsak

3:30 pm   **M4-F.1**
Limitations of the Risk Matrix: Improving Risk Models for Cybersecurity of Mission-Critical Defense Systems
Elijah Evans
DESE Research Inc.

3:50 pm   **M4-F.2**
Warnings and management of cyber threats by a hybrid AI system (robot and human operator)
Elisabeth Pate-Cornell
Stanford

4:10 pm   **M4-F.3**
Finding communication paths in incomplete networks: implications for cybersecurity
Maksim Kitsak
Delft University of Technology

4:30 pm   **M4-F.4**
Resilience of multi-scale rail networks against compound floods and opportunistic failures
Jack Watson
Northeastern University

4:50 pm   **M4-F.5**
A signal detection framework for threat perception and self defense
Richard John
University of Southern California

3:30 PM – 5:00 PM

M4-G: Salmonella, Pork, and the Critical Role of Analysis and Data to Inform Decision-Making and Metrics Development
Meeting Room 10 (3rd Floor)
Chair: Janell Kause

3:30 pm   **M4-G.1**
Knowing where we started to understand where we want to go: Part 1--Utilizing Salmonella pork exploratory sampling data to set baselines for future evaluations
Neal Golden
USDA/FSIS

3:50 pm   **M4-G.2**
Knowing where we started to understand where we want to go: Part 2óUtilizing Salmonella pork exploratory sampling and questionnaire data to identify risk factors for future evaluation
Eric Ebel
USDA/FSIS

4:10 pm   **M4-G.3**
Science in Action: From risk assessment to policy--the new Salmonella performance standards for raw pork products
Neal Golden
USDA/FSIS

4:30 pm   **M4-G.4**
The Margins Matter: A case study in how we can use non-inferiority tests to assess the risk of Salmonella in pork
Eric Ebel
USDA/FSIS

3:30 PM – 5:00 PM

M4-H: Symposium: Benzene Contamination in Consumer Products: Exposures and Implications for Human Health and The Environment
Meeting Room 11 (3rd Floor)
Chair: Debra Kaden

3:30 pm   **M4-H.1**
Detection of benzene in consumer products
David Light
Valisure

3:50 pm   **M4-H.2**
Benzene Contamination in Consumer Products: Understanding the Regulatory Landscape
Nancy Beck
Hunton Andrews Kurth

4:10 pm   **M4-H.3**
Environmental Impact of Currently Marketed Sunscreens and Potential Human Impacts of Changes in Sunscreen Usage
Charles Menzie
Exponent

4:30 pm   **M4-H.4**
Understanding exposures and the potential for health effects from benzene contamination in consumer products
Robinan Gentry
Ramboll US Consulting

8:30 AM – 10:00 AM

T1-A: Towards Enhancing Power Grid Resilience under Climate Change and Extreme Weather Events
Grand Ballroom Salon A (2nd Floor)
Chair: Sayanti Mukherjee

8:30 am   **T1-A.1**
Hurricane resilience of power systems: Effects of socioeconomic status and sociodemographic factors
Abdollah Shafieezadeh
The Ohio State University

8:50 am   **T1-A.2**
Power outage risk under uncertain climate change
Negin Alemazkoor
University of Virginia

9:10 am   **T1-A.3**
Engineering resilience in the critical energy infrastructure
Giovanni Sansavini
ETH Zurich

8:30 AM – 10:00 AM

T1-B: Risk of the Year
Grand Ballroom Salon B (2nd Floor)
Chair: TBD

8:30 AM – 10:10 AM

T1-C: Symposium: Management of Security and Safety Risks: A Cost and Benefits Perspective
Grand Ballroom Salon C (2nd Floor)
Chair: Unal Tatar

8:30 am   **T1-C.1**
Uncertainty Analysis of Business Interruption Losses in the Philippines Due to the COVID-19 Pandemic
Joost Santos
George Washington University

8:50 am   **T1-C.2**
Visible Deterrence: A Novel Experiment of Adversary Dissuasion in Transportation Security
Brandon Behlendorf
University at Albany

9:10 am   **T1-C.3**
Wastewater-based Epidemiology: an Emerging Tool for Public Health Surveillance and Early Warning for Disease Outbreaks
Sheree Pagsuyoin
UMass Lowell

9:30 am   **T1-C.4**
Robustness of Flood Protection Project Evaluation to Alternative Benefit Metrics
David Johnson
Purdue University

9:50 am   **T1-C.5**
Synergies and Incompatibilities between AI and Fundamental Risk Principles in Disaster Risk Management
Unal Tatar
University at Albany

8:30 AM – 10:00 AM

T1-D: How Low Can You Go? Examining the Basis, Reliability, and Interpretation of Continuous Dose-Response Projected to Low Exposures for Noncancer Endpoints
Grand Ballroom Salon D (2nd Floor)
Chair: Lorenz Rhomberg

8:30 am   **T1-D.1**
Limits to meaningful projection of noncancer risk levels to lower doses
Lorenz Rhomberg
Gradient

8:50 am   **T1-D.2**
Lessons from Beyond Science and Decisions Workshops Regarding Noncancer Risk
Michael Dourson
TERA

9:10 am   **T1-D.3**
Wrestling with Uncertainty in the Low-Dose Region for Non-Cancer Risk Assessment
Greg Paoli
Risk Sciences International

9:30 am   **T1-D.4**
Discussion - Risk-Specific Doses for Noncancer Toxicity
Julie Goodman
Gradient

8:30 AM – 10:10 AM

T1-E: Another Natural Hazards Session
Meeting Room 8 (3rd Floor)
Chair: Thi Mui Nguyen

8:30 am   **T1-E.1**
Equipping the avalanche safety community with better insight for developing and evaluating risk communication products: Developing a dedicated research panel and identifying meaningful user profiles
Pascal Haegeli
Simon Fraser University

8:50 am   **T1-E.2**
How do winter backcountry recreationists make avalanche risk management decisions in the field? Identifying and characterizing in-field decision-making practices to inform improved risk communications.
Rosemary Langford
Simon Fraser University Avalanche Research Program

9:10 am   **T1-E.3**
Impact of Chemical Release Accidents on Rivers Caused by a Major Earthquake and Evaluation of Countermeasure Options
Lisa Ito
Osaka University

9:30 am   **T1-E.4**
Extreme weather drivers during power outages in the United States
Nicole Jackson
Sandia National Laboratories

9:50 am   **T1-E.5**
drought perception and adapation in Vietnam
Thi Mui Nguyen
Victoria University of Wellington

8:30 AM – 10:00 AM

T1-F: Supply Chain & Cyber Risks
Meeting Room 9 (3rd Floor)
Chair: Adam Rose

8:30 am   **T1-F.1**
Credit Rating Processes Applied to Critical Infrastructure Cyber Risk Assessment
Kevin Griffith
Sandia National Labs

8:50 am   **T1-F.2**
Business process mapping for risk identification in semiconductor manufacturing
Zachary Collier
Radford University

9:10 am   **T1-F.3**
Cyber risk of shipbuilding supply network: data science + risk analytics approach
Ahmed M. Abdelmagid
Old Dominion University

8:30 AM – 10:00 AM

T1-G: Evaluating Risks of Novel Food and Agriculture Technologies through Interdisciplinary Approaches
Meeting Room 10 (3rd Floor)
Chair: Khara Grieger

8:30 am   **T1-G.1**
Key parameters to consider in environmental risk assessment of genetically engineered and gene edited agrifoods
Willy Wei
North Carolina State University

8:50 am   **T1-G.2**
Evaluating Risks, Benefits, and Societal Implications of Novel Agrifood Technologies
Nick Loschin
North Carolina State University

9:10 am   **T1-G.3**
Fostering Responsible Innovation of Nano-Agrifoods through Interdisciplinary Perspectives and Insights
Khara Grieger
North Carolina State University

9:30 am   **T1-G.4**
Exploring the role of regulation to ensure animal welfare of gene edited animals
Ilaria Cimadori
Yale University

8:30 AM – 10:00 AM

T1-H: Risk Analysis of Emerging Advanced Materials and Technologies
Meeting Room 11 (3rd Floor)
Chair: James Ede

8:30 am   **T1-H.1**
Health and Safety Assessment and Risk Communication ñ The Challenge of Additive Manufacturing/3D Printing
Treye Thomas
CPSC

8:50 am   **T1-H.2**
Safer by Design Toolbox for the Risk Assessment of Next Generation Cellulose Nanomaterials
Brian Zhang
Vireo Advisors

9:10 am   **T1-H.3**
Life-cycle Risk Assessment of Consumer Applications of Graphene: Outcomes, Data Gaps and Priorities
James Ede
Vireo Advisors

9:30 am   **T1-H.4**
Risk Screening of Phosphorus Capturing Materials for Eutrophication Control: Environmental Impacts and Sustainable Management
Mumtahina Riza
North Carolina State University

8:30 AM – 10:00 AM

T1-I: SRA's Risk Analysis Quality Test: 3 Surprise Spinoff Insights and How to Apply Them
Meeting Room 5 (2nd Floor)
Chair: John Lathrop

The Applied Risk Management SG developed the SRA Risk Analysis Quality Test (sra.org/resources/risk-analysis-quality-test/) to: 1) test any risk analysis, past or planned, for its risk analysis quality; 2) characterize risk analysis quality; 3) promote risk analysis quality; and 4) promote a culture of risk analysis quality. As we developed the RAQT and sought applications for it, we discovered three spinoff insights: 1) The RAQT provides a taxonomy and ontology of risk analysis quality – we will present and seek feedback-new-ideas; 2) Testing the RAQT against different specialty areas, as defined by SRA Specialty Groups, we find that different SGs have different subsets of the RAQT 76 questions that apply most importantly, and that are important but may not be often considered – we will present and seek feedback-new-ideas; 3) Many risk analysts work within a limited scope role in risk analysis as defined by SRA to include risk identification, characterization, assessment, communication, management, etc. – and so we will pose the question: How can SRA practitioners use the RAQT to improve the overall quality of a full-scope risk management process despite having authority over just a limited part of the process? In short, while we built the RAQT as a test of risk analysis quality, we find that it is a lot more than that: it is a basis for understanding what comprises risk analysis quality, how that risk analysis quality varies among areas of specialization, and the relationships between individual and small-team risk analysts and overall risk analysis quality. There is more: Our panelists have been actively researching related topics, and will have recently-developed insights to present and discuss in December. One example: The role of a "risk analysis" in its larger political and/or institutional frame may prevent it from being an actual risk analysis. That effect may be either inadvertent or purposeful. The roundtable will be run as a workshop, asking the panelists and the audience to contribute ideas in each of the three areas listed, and on each of the additional issues the panelists raise.

Panelists
- Terje Aven, Emma Soane, Charles Redinger, Richard Belzer

10:30 AM – 12:10 PM

T2-A: Adaptation Planning of Engineered Systems for Climate Change
Grand Ballroom Salon A (2nd Floor)
Chair: Tom Logan

10:30 am   **T2-A.1**
Cascading risks through interdependent infrastructure-social systems
Tom Logan
University of Canterbury

10:50 am   **T2-A.2**
Estimating the impact of sustainability requirements during federally-funded post-disaster reconstruction
Linda Waters
University of Maryland

11:10 am   **T2-A.3**
Adaptation planning for non-housing infrastructure in rural, coastal regions vulnerable to sea-level rise
Allison Reilly
University of Maryland

11:30 am   **T2-A.4**
Challenges in planning for climate change in the electric sector
Andrea Staid
EPRI

11:50 am   **T2-A.5**
Regional responses to sea-level rise adaptation in the San Francisco Bay Area
Michelle Hummel
University of Texas at Arlington

10:30 AM – 12:10 PM

T2-B: COVID-19 Vaccine Information and Decision-Making for At-Risk and Equity-Deserving Populations
Grand Ballroom Salon B (2nd Floor)
Chair: Cindy Jardine

10:30 am   **T2-B.1**
The impact on trust when vaccine access changes: Examining a tale of two pandemics on Red River Mêtis vaccine decisions
S. Michelle Driedger
University of Manitoba

10:50 am   **T2-B.2**
"They're trying to bribe you and taking away your freedoms": COVID-19 vaccine hesitancy in communities with traditionally low vaccination rates
Gabriela Capurro
University of Manitoba

11:10 am   **T2-B.3**
COVID-19 vaccine attitudes and healthcare interactions among temporary foreign agricultural workers in British Columbia
Marinel Kniseley
University of the Fraser Valley

11:30 am   **T2-B.4**
"I'm scared - what if more side effects come out?": Pediatric COVID-19 vaccination decisions of South Asian parents
Cindy Jardine
University of the Fraser Valley

11:50 am   **T2-B.5**
COVID-19 vaccine experiences of people with disabilities (PWD) in Manitoba, Canada
Jen Sebring
University of Manitoba

10:30 AM – 12:00 PM

T2-C: SRA/MORS Collaboration in U.S. National Security Risk Analysis Challenges
Grand Ballroom Salon C (2nd Floor)
Chair: Barry Ezell

The current U.S. National Security Strategic Interim Guidance describes numerous national security challenges of potentially global significance. In addition to the emergence of militarily near-peer authoritarian adversaries such as China, Russia and regional troublemakers like Iran and North Korea which seek to undermine democracies around the world, America and its allies face additional challenges that include recovery from the pandemic, national and global economic downturns, internal polarization and racial justice questions, terrorism, a deepening climate emergency, cybersecurity and perceived increases in the frequency of natural disasters.

A consequence of today's complex and interconnected geopolitical environment is the need to make national security decisions in the face of broad uncertainties that can result in unintended outcomes with uneven undesirable national and international ramifications. This reality dictates a need for robust analytical and risk modeling, assessment, management, and communication approaches that are viable and implementable within and across borders.

A significant distinguishing feature of this roundtable panel is that it will be comprised of expert participants from both the Society of Risk Analysis (SRA) and the Military Operations Research Society (MORS). The motivation for, and objective of, this unique roundtable composition is to identify ways of combining the highly regarded and complementary experiences, skills and expertise of SRA risk science subject matter experts and the defense and national security analytical and domain expertise and experience of MORS operations research subject matter experts. Doing so is predicted to result in more holistic and impactful analyses of the national security challenges facing our countries and the development of more effective and actionable alternative risk management approaches for our national defense and security decision makers.

Panelists
- Kenneth Crowther, Cameron MacKenzie, Barry Ezell, Arch Turner

10:30 AM – 12:10 PM

T2-D: Communicating Disease Risk
Grand Ballroom Salon D (2nd Floor)
Chair: Frederic Bouder

10:30 am   **T2-D.1**
Effects of communicating lifetime risks and screening rates of colorectal cancer and breast cancer
Jiawei Liu
Cornell University

10:50 am   **T2-D.2**
Prevalence and content of messages in the public communication environment about alcohol use as a modifiable risk factor
Andy King
University of Utah

11:10 am   **T2-D.3**
Communicating uncertainty about cancer: a systematic review
Andy King
University of Utah

11:30 am   **T2-D.4**
Fighting the Covid19 pandemic with enhanced risk communication (PAN-FIGHT): learning from comparative research
Frederic Bouder
University of Stavanger

11:50 am   **T2-D.5**
Characterizing risk in relation to COVID-19: a review of current practices with suggestions for improvement
Ingrid Glette-Iversen
University of Stavanger

10:30 AM – 12:00 PM

T2-E: Roundtable: Role of Occupational Exposure Assessments Under Amended TSCA Risk Evaluations
Meeting Room 8 (3rd Floor)
Chair: Neeraja Erraguntla

Occupational exposure assessment remains a high impact element of TSCA chemical risk evaluations. This proposal follows up on the 2022 Society of Toxicology (SOT) symposium to describe developments of how the activities around occupational exposure assessment have progressed under amended TSCA. Under the current implementation framework both EPA and OSHA standards may apply in the workplace. This informational session will discuss the progress made in assessing and managing exposures and risk in occupational settings under amended TSCA. This informational session will present an overview of continuing opportunities and challenges in harmonizing TSCA risk evaluations and occupational exposure assessments. Additionally, this session will highlight best practices to gather, aggregate, analyze, and communicate occupational exposure data. Other available resources including tools for exposure assessment and educational webinars to provide information, encourage knowledge sharing, and streamline communication amongst various stakeholders will also be presented.

Panelists
- Silvia Maberti
- Elke Jensen
- Andrew Maier
- Majd El-Zoobi
- Christine Whittaker

10:30 AM – 12:00 PM

T2-F: Symposium: Resilient Supply Chains: Methodology and Applications in California and Florida Transportation Systems
Meeting Room 9 (3rd Floor)
Chair: Kelsey Stoddard

10:30 am   **T2-F.1**
Resilience and Efficiency in Transpiration Supply Chains
Walter Hannah, Igor Linkov, Kelsey Stoddard
California Transportation Commission, US Army Corps of Engineers - ERDC

10:50 am   **T2-F.2**
Resilience in Florida Transportation Systems
Allison Yeh, Randy Deshazo
Tampa Bay Regional Planning Council

11:10 am   **T2-F.3**
Increasing Supply Chain Resilience Through Transportation Policy and Investment Optimization Tools in California
Kelsey Stoddard
US Army Corps of Engineers - ERDC

11:30 am   **T2-F.4**
Economic Analysis Framework for Freight Transportation Based on Florida Statewide Multi-Modal Freight Model
Zhong-Ren Peng
University of Florida

10:30 AM – 12:00 PM

T2-G: Roundtable: Cultured Meat and Alternative Protein Safety: Key Questions and Perspectives
Meeting Room 10 (3rd Floor)
Chair: Jo Anne Shatkin

There is a significant number of organizations developing alternative sources of protein to meet the growing need for safe, available and more ethical food sources. Products such as human breast milk proteins for infant formula, cultured meat and seafood, insect protein and a diversity of plant-based proteins are in development and in cases entering in the market. This roundtable aims to highlight important issues for safety demonstration to improve the regulatory and commercial acceptance of these emerging food types and highlight key information needs. Presenters will offer perspectives on important issues for risk analysis for alternative proteins, with a focus on cultured meat and seafood products.

Vireo has been working with New Harvest and NeutralScience to convene key stakeholders in cellular agriculture to identify research priorities for advancing safety demonstration on the novel aspects of these and related alternative proteins. William Hallman has been conducting studies of consumer perception of these emerging technologies. Panelists will discuss perspectives from a diversity of views including consumer, international, industrial and governmental perspectives, followed by a discussion on key safety questions.

Panelists
- Kimberly Ong,
- Richard Canady
- William Hallman

— Tuesday —

10:30 AM – 12:10 PM

T2-H: Symposium: New Approaches to Measure Perceptions and Decision-Making Regarding Risks and Rechnologies: A Methodological Exchange
Meeting Room 11 (3rd Floor)
Chair: Angela Bearth

10:30 am **T2-H.1**
Please imagine the following situationÖ - Using scenarios and vignettes to investigate risk perception and technology acceptance
Angela Bearth
ETH Zurich

10:50 am **T2-H.2**
How methods may have an unwanted impact on research questions
Michael Siegrist
ETH Zurich

11:10 am **T2-H.3**
Drawing Different Conclusions from the Same Evidence: Belief in Hydroxychloroquine During the COVID-19 Pandemic
Caitlin Drummond Otten
Arizona State University

11:30 am **T2-H.4**
Risk perceptions, critical thinking, and acceptance of genome editing in the United States and Switzerland
Alex Segrè Cohen
University of Oregon

11:50 am **T2-H.5**
Measuring community acceptance and the perceived risk of clean energy technologies
Douglas Bessette
Michigan State University

10:30 AM – 12:00 PM

T2-I: Roundtable: Risk Analysis Quality Test (RAQT) Applications to Microbial Risk Analysis
Meeting Room 5 (2nd Floor)
Chairs: Margaret Coleman, John Lathop, Robert Waller

The Applied Risk Management Specialty Group (ARMSG) partnered with risk practitioners spanning the full spectrum of risk analysis topics from assessment to communication, management, and governance to develop a unique tool, the Risk Analysis Quality Test (RAQT) of the Society for Risk Analysis. The RAQT arose from the experience of diverse risk practitioners with pitfalls and shortcomings of risk analyses as applied to decision making. RAQT includes a comprehensive battery of 76 'experienced-pitfall-based' questions. The tool can be used to generate a report that can be shared with colleagues, critics, and external reviewers. The reports generated from the RAQT beta testing are offered for deliberation and reflection, consistent with the goal of creating a culture of quality analysis, full disclosure, and detailed consideration of shortfalls as opportunities to improve risk analysis processes. One or more experts, who did not develop the RAQT, conducted beta tests of the RAQT with the two historic government microbial risk assessments listed below that include a common food commodity: raw milk. A diverse expert panel of risk assessors and the SRA audience will engage in dialogue about the outputs of the beta testing using the RAQT to stimulate deliberations about analysis quality and improve microbial risk assessment processes, integrating 21st century risk science. The roundtable deliberations will be moderated by ARMSG members who led development of the RAQT.

Panelists
- Margaret Coleman
- Tom Ross
- Richard Williams

1:30 PM – 3:00 PM

T3-A: Symposium: Sustainability, Resilience, Engineering, and Environmental Justice
Grand Ballroom Salon A (2nd Floor)
Chair: Benjamin Rachunok

1:30 pm **T3-A.1**
An enhanced approach to climate risk assessments in urban environments: evaluating indirect risk and identifying co-benefits for better adaptation and long-term planning
Mitchell Anderson
University of Canterbury

1:50 pm **T3-A.2**
Exploring the disproportionate impact of rising temperatures on US household air conditioning demand
Renee Obringer
Penn State University

2:10 pm **T3-A.3**
Drought impacts on equitable water affordability
Benjamin Rachunok
Stanford University

2:30 pm **T3-A.4**
Integrating social vulnerability into rehabilitation decisions for deteriorating transportation structures
Jessica Boakye
University of Massachusetts Amherst

1:30 PM – 3:10 PM

T3-B: Symposium: Resilience of Energy Systems
Grand Ballroom Salon B (2nd Floor)
Chair: Hiba Baroud

1:30 pm **T3-B.1**
Access, Equity, and Community Resilience
Seth Guikema
University of Michigan

1:50 pm **T3-B.2**
Using indicators of socio-economic vulnerability to predict spatial variations in resilience to power outages resulting from extreme weather events
Paul Johnson
Vanderbilt University

2:10 pm **T3-B.3**
Risks of Reductionism: Comparing Climate and Equity Methodologies for Interdisciplinary Energy Justice Research
Mariah Caballero
Vanderbilt University

2:30 pm **T3-B.4**
A Hierarchical Data Driven Optimization Framework to Enhance Power Grid Infrastructure Resilience Under Compound Effects of Climate Change and Extreme Weather Events
Sayanti Mukherjee
University At Buffalo, The State University of New York

2:50 pm **T3-B.5**
Extreme weather drivers during power outages in the United States
Nicole Jackson
Sandia National Laboratories

1:30 PM – 3:00 PM

T3-C: Roundtable: The Future of Risk Research for Homeland Security
Grand Ballroom Salon C (2nd Floor)
Chair: Gary Ackerman

On May 16-17, 2022, the Center for Accelerating Operational Efficiency (CAOE), a Department of Homeland Security (DHS) Center of Excellence, convened an interdisciplinary workshop in Washington, DC. Consisting of roughly equal numbers of non-government risk researchers and government risk practitioners, the aim of the workshop was to jointly explore a path forward for the next five years with respect to innovative academic and policy research in the risk sciences to support the Homeland Security Enterprise. The workshop was attended by many high-profile researchers and government officials who work on security-related risk issues and explored four domains of risk through a series of working groups: 1) Risk Identification and Characterization (esp. regarding emerging risks); 2) Risk Assessment and Analysis; 3) Risk Management and Governance; 4) Risk Perception and Risk Communication. The working groups identified risk science needs in homeland security across each of these domains, prioritized those needs, and translated those needs into research questions and approaches that could be addressed by the risk community. The proposed roundtable will report on the findings of the workshop and extend the discussions that took place there. It will do so by assembling a panel of the workshop participants to convey their impressions about the future of risk research for homeland security, as well as engage the wider risk community by expanding the discussion and involving SRA audience members in thinking about how to proceed along several research paths. Not only will the roundtable provide SRA members with guidance that emerged on the most necessary and policy-relevant application of the risk sciences for DHS, but it will present an opportunity to continue the conversation by bringing in the wider risk community.

Panelists

- Jonathan Welburn, Ross Snare, Ryan Riccucci, Rae Zimmerman, Richard John, Jun Zhuang, Kenneth Crowther, Jacqueline Meszaros

1:30 PM – 3:00 PM

T3-D: Risk Perception & Information Processing
Grand Ballroom Salon D (2nd Floor)
Chair: Gabrielle Wong-Parodi

1:30 pm   T3-D.1
"Smells fishy": Exploring sense of place salience in community acceptance of closed net-pen aquaculture in Frenchman Bay, Maine
Gabriella Gurney
University of Maine

1:50 pm   T3-D.2
Compensatory Use of Reusable Shopping Bags
Prerna Shah
SUNY-Buffalo

2:10 pm   T3-D.3
Social Endorsement, Credibility, and Support for the Regulation of Research on Enhanced Geothermal Systems
Sara Yeo
University of Utah

2:30 pm   T3-D.4
How risk perceptions form and sustain adaptation to climate change
Gabrielle Wong-Parodi
Stanford University

1:30 PM – 3:10 PM

T3-E: Risk Perception & Information Processing
Meeting Room 8 (3rd Floor)
Chair: Christopher Cummings

1:30 pm   T3-E.1
Socio-metabolic risk and tipping points on islands
Pia-Johanna Schweizer
Institute for Advanced Sustainability Studies

1:50 pm   T3-E.2
Understanding neighborhood-level socioeconomic disparities in access to essential services during a disaster using dynamic mobility networks
Zhiyuan Wei
University at Buffalo

2:10 pm   T3-E.3
Operationalizing equitable pandemic response
Emily Wells
Carnegie Mellon University

2:30 pm   T3-E.4
Stakeholder perceptions of CDR in the Global South
Elspeth Spence
Cardiff University

2:50 pm   T3-E.5
Labor violation trends in H-2A nonimmigrant agricultural workers: Improving inspection strategies for detecting labor violations
Arezoo Jafari
Northeastern University

1:30 PM – 3:00 PM

T3-F: Symposium: Current Supply-Chain Risks and Impacts
Meeting Room 9 (3rd Floor)
Chair: Adam Rose

1:30 pm   T3-F.1
Supply-Chain Resilience: Methodology and Applications
Igor Linkov
Engineer Research and Development Center, U.S. Army Corps of Engineers

1:50 pm   T3-F.2
Understanding U.S. Imports of Medical Devices
Aliya Sassi
US Food and Drug Administration

2:10 pm   T3-F.3
Supply-Chain Impacts of the War in the Ukraine on World Regions
Adam Rose
University of Southern California

1:30 PM – 3:00 PM

T3-G: Foodborne Illness & Microbial Risk Modeling
Meeting Room 10 (3rd Floor)
Chair: Ashwani Tiwari

1:30 pm T3-G.1
Collaboration and stakeholder involvement in the risk analysis process to reduce Salmonella illnesses from poultry consumption
Janell Kause
Food Safety and Inspection Service

1:50 pm T3-G.2
Risk Assessment Models to support Salmonella and Campylobacter Performance Standards in Poultry in Canada.
Ashwani Tiwari
Canadian Food Inspection Agency

2:10 pm T3-G.3
A Quantitative Microbiological Risk Assessment for cryptosporidiosis among NJ Dairy Cattle Farmers
Alexis Mraz
The College of New Jersey

2:30 pm T3-G.4
The Economic Burden of Foodborne Illnesses in the United States: A Systematic Literature Review
Joseph Njau
Food and Drug Administration

1:30 PM – 3:00 PM

T3-H: Wastewater and Water Quality
Meeting Room 11 (3rd Floor)
Chair: Ryan Julien

1:30 pm T3-H.1
Current practices and knowledge gaps in managing building water quality: application of a literature-engaged Delphi approach
Md Rasheduzzaman
Virginia Polytechnic Institute and State University

1:50 pm T3-H.2
Interpreting wastewater-based epidemiology results at the building and community levels for SARS-CoV-2
Jade Mitchell
Michigan State University

2:10 pm T3-H.3
DisTorting Science? Regulations or Torts, which is more appropriate for managing chemical risk?
Richard Williams
RichardAWilliams.com

1:30 PM – 3:00 PM

T3-I: Lightning Session: Risk Communication/Perception
Meeting Room 5 (2nd Floor)
Chair: Amanda Boyd

1:30 pm T3-I.1
Understanding the potential effects of health and non-health beliefs on outcomes in individuals with type 2 diabetes
Carolyn Lo
National University of Singapore

1:35 pm T3-I.2
Sustaining Change Under Risk: Promoting Intrinsic Motivation for Environmental Behavior Change Programs
Naseem Dillman-Hasso
The Ohio State University

1:40 pm T3-I.3
A new way to configure severity and susceptibility perception to predict risk behaviors and attitudes
Haoran Chu
University of Florida

1:45 pm T3-I.4
Measuring climate change efficacy perceptions: a scale validation study
Soobin Choi
University of Michigan

1:50 pm T3-I.5
Dimensions of risk perception: A multi-risk multi-target perspective
Leonard Lee
National University of Singapore

2:00 pm T3-I.6
Enforcing social norms during the pandemic: analysis of descriptive nature and antecedents
Hwanseok Song
Purdue University

2:05 pm T3-I.7
Risk Communication and Public Response to Potential Radiation Emergencies
Andrew Fox
University of Oklahoma

2:10 pm T3-I.8
Risk Communication among Inuit women in Nunavik about mercury, country foods, and pregnancy
Amanda Boyd
Washington State University

3:30 PM – 5:00 PM

T4-A: Roundtable: Incorporating Risk Equity into the Distribution of New Federal Infrastructure Funding
Grand Ballroom Salon A (2nd Floor)
Chair: Jacqueline MacDonald Gibson

The Bipartisan Infrastructure Law, enacted by the U.S. Congress in November 2021, allocated more than $30 billion in new funding for U.S. drinking water infrastructure—the largest such investment in history. It mandates that 49% of funds go to disadvantaged communities as grants and forgivable loans. However, the legislation does not define "disadvantaged communities." Instead, it tasks states with doing so, with oversight from the U.S. Environmental Protection Agency (EPA). As a result, states are re-conceptualizing their processes for allocating infrastructure funds, which typically are based on point systems that may not give sufficient weight to equity. This roundtable discussion will bring together decisionmakers who are actively working to implement these new legislative requirements. Roundtable speakers will give brief lightning talks on how their organizations plan to define the term "disadvantaged community" and how they will incorporate this definition into their infrastructure funding decisions. Then, roundtable participants will engage the audience in a moderated discussion of how concepts and frameworks for considering equity in risk analysis could inform these ongoing policy decisions. The roundtable is being organized by the SRA's Justice, Equity and Risk Specialty Group. Speakers will be invited if the proposed roundtable is selected for the SRA Annual Meeting. Invitees will include Jonathan Nelson, Senior Advisor, Office of Water, EPA; Brad Baird, Deputy Administrator for Infrastructure for the City of Tampa Utilities Department; Michael Lynch, Division of Water Resource Management, Florida Department of Environmental Protection; Shadi Eskaf, Director, Division of Water Infrastructure, North Carolina Department of Environmental Quality; Jeff Hughes, Utilities Commissioner for North Carolina; and Sarah Hudson, Director of Water Resources and Infrastructure Planning Program, Indiana Finance Authority

3:30 PM – 5:00 PM

T4-B: Symposium: Enhanced Geothermal Energy: New Research Findings and Implications for Renewable Energy Acceptance
Grand Ballroom Salon B (2nd Floor)
Chair: Catherine Lambert

3:30 pm   **T4-B.1**
Context-based communication strategies for renewable transitions: a case study of deep geothermal energy
Catherine Lambert
Cornell University

3:50 pm   **T4-B.2**
Repurposing "Dirty" Technologies for "Clean" Energy Development: The Case of Enhanced Geothermal Systems
Katherine McComas
Cornell University

4:10 pm   **T4-B.3**
How do beliefs about the underground and tampering with nature influence perceptions of Enhanced Geothermal Systems (EGS) in Switzerland and the United States?
Julia Cousse
University of Geneva

4:30 pm   **T4-B.4**
EGS perceptions in Utah [placeholder]
Sara Yeo
University of Utah

3:30 PM – 5:00 PM

T4-C: Symposium: Risk Informed Decision and Benefit Analysis in Cybersecurity
Grand Ballroom Salon C (2nd Floor)
Chair: Omer Keskin

3:30 pm   **T4-C.1**
Productive supply chain cybersecurity risk management decisions for industrial automation and control devices in critical infrastructure
Kenneth Crowther
Xylem

3:50 pm   **T4-C.2**
Reinforcement Learning for Autonomous Cyber Defense Optimization
Samrat Chatterjee
Pacific Northwest National Laboratory

4:10 pm   **T4-C.3**
Cyber risk of shipbuilding supply network: data science + risk analytics approach
Ahmed M. Abdelmagid
Old Dominion University

4:30 pm   **T4-C.4**
Cybersecurity breach and disclosure
Jonathan Welburn
RAND Corporation

3:30 PM – 5:10 PM

T4-D: Risk and Human Factors Impacting Assessment
Grand Ballroom Salon D (2nd Floor)
Chair: Igor Linkov

3:30 pm   **T4-D.1**
Resilient International Teams: Diversity and Inclusiveness
Gregory Kiker
University of Florida

3:50 pm   **T4-D.2**
The Role of Human Factors in Security Risk Analysis: An Experimental Plan
Katja Tuma
Vrije Universiteit Amsterdam

4:10 pm   **T4-D.3**
The influence of risk awareness and government trust on risk perception and preparedness for natural hazards
Pamela Cisternas
Research Center for Integrated Disaster Risk Management (CIGIDEN)

4:30 pm   **T4-D.4**
Can everything be explained by decision bias? An organizational perspective on decision processes to improve disaster risk reduction
Myriam Merad
Paris Dauphine University - PSL

4:50 pm   **T4-D.5**
Social sensing and human in the loop profiling during pandemics: a preliminary application during the COVID-19 pandemic
Rui Gaspar
Catholic University of Portugal

3:30 PM – 5:00 PM

T4-E: Climate Change Adaptation and Resilience
Meeting Room 8 (3rd Floor)
Chair: Gabrielle Wong-Parodi

3:50 pm   **T4-E.1**
Beyond Motivation: Towards a model of Protective Action Theory (PAT)
Gavin Brown
Dublin City University

4:10 pm   **T4-E.2**
How subjective attributions form and sustain adaptation to climate change
Gabrielle Wong-Parodi
Stanford University

4:30 pm   **T4-E.3**
Towards an observatory to monitor resilience to floods in Tahiti
Bastien Bourlier
University of French Polynesia

4:50 pm   **T4-E.4**
A serious game as part of an observatory for climate risk resilience strategies: application in French Polynesia
Charlotte Heinzlef
University Paris Saclay, UVSQ - CEARC

3:30 PM – 5:00 PM

T4-F: Roundtable: In Memory of Dr. Sharon Dunwoody – Research Based on the RISP Model
Meeting Room 9 (3rd Floor)
Chair: Janet Yang

3:30 pm   **T4-F.1**
In memory of Dr. Sharon Dunwoody - research based on the RISP Model
Janet Yang
University at Buffalo

3:30 pm   **T4-F.2**
Reflections on the planned risk information seeking model
Lee Kahlor
UT-Austin

3:30 pm   **T4-F.3**
Empirical review for the risk information seeking and processing model
Robert Griffin
Marquette University

3:30 pm   **T4-F.4**
For my own sake: The role of personal relevance in information seeking
Zhuling Liu
Shanghai Jiao Tong University

3:30 PM – 5:00 PM

T4-G: Innovative Approaches in Food Safety Risk Management
Meeting Room 10 (3rd Floor)
Chair: Yuhuan Chen

3:30 pm   **T4-G.1**
FDA's Risk-Ranking Model for Food Tracing (RRM-FT) to Inform the Development of Traceability Regulations
Yuhuan Chen
FDA Center for Food Safety and Applied Nutrition

3:50 pm   **T4-G.2**
A multi-criteria approach for evaluating food safety and environmental impacts: Case study of a large dairy farm
Rodney Feliciano
Secalim, INRAE, Oniris

4:10 pm   **T4-G.3**
A Confidential Data Sharing Platform for Food Safety Risk Management - Overview and Initial Results
De Ann Davis
Western Growers

4:30 pm   **T4-G.4**
An interactive generic physiologically based pharmacokinetic modeling platform to predict meat and milk residues and withdrawal intervals for perfluorooctanoic acid, perfluorooctane sulfonate and perfluorohexane sulfonate in beef and dairy cattle
Zhoumeng Lin
University of Florida

3:30 PM – 5:10 PM

T4-H: Symposium: Risk Analysis for Arctic Systems
Meeting Room 11 (3rd Floor)
Chair: Hiba Baroud

3:30 pm   **T4-H.1**
A Bayesian Network Approach for Predicting Future Risk in Arctic Maritime Transit
Wenjie Li
George Mason University

3:50 pm   **T4-H.2**
Machine learning models to predict the Arctic maritime incident types
Rajesh Kandel
Vanderbilt University

4:10 pm   **T4-H.3**
Corridor Trace Analysis for Arctic Routes and Logistics Systems
Rebecca Rebar
University of Virginia

4:30 pm   **T4-H.4**
Arctic Infrastructure and Resilience
Benjamin Trump
US Army Corps of Engineers

4:50 pm   **T4-H.5**
Machine learning models to predict the Arctic maritime incident types
Rajesh Kandel
Vanderbilt University

3:30 PM – 5:00 PM

T4-I: Lightning Session: Emerging Topics in Risk, Engineering, and Public Policy
Meeting Room 5 (2nd Floor)
Chair: Adam Zwickle

3:30 pm   **T4-I.1**
Probabilistic characterization of mortality attributable to chronic exposure to ambient PM2.5: an expert elicitation focusing on risks in Kuwait and other understudied locations
Kyle Colonna
Harvard University

3:40 pm   **T4-I.2**
Risk assessment and management at universities and colleges. Experiences from Norway.
Marie Rayksund
University of Stavanger

3:45 pm   **T4-I.3**
Drawing blanks and winning: Quantifying Bostrom's urn model of existential risk
John-Oliver Engler
University of Vechta

3:50 pm   **T4-I.4**
Machine Learning Assisted Frameworks to Forecast Truck Travel Time Reliability and Evaluate Risk of Disruption of Logistics
Negin Moghadasi
University of Virginia

3:55 pm   **T4-I.5**
Encouraging local collaborative governance in response to decreasing groundwater availability
Adam Zwickle
Michigan State University

8:30 AM – 10:10 AM

W1-A: Public Engagement: COVID and other Air Contaminants
Grand Ballroom Salon A (2nd Floor)
Chair: Wandi Bruine de Bruin

8:30 am   **W1-A.1**
Improving graphs for climate change communications: Insights from interviews with international policy makers and practitioners
Wandi Bruine de Bruin
University of Southern California

8:50 am   **W1-A.2**
Effects of social trust and confidence on cooperation during a pandemic: examining the moderating role of COVID-19 knowledge
Prince Adu Gyamfi
Purdue University

9:10 am   **W1-A.3**
How COVID-19 impacts academic scientists' public engagement participation
Mikhaila Calice
University of Wisconsin-Madison

9:30 am   **W1-A.4**
Communication, emotion, and reason: Testing the impact of uncertainty communication on emotions and public participation in decision-making related to nuclear decommissioning
Ferdiana Hoti
University of Antwerp

8:30 AM – 10:10 AM

W1-B: US Risk Policy: Climate, Covid and Other Risks
Grand Ballroom Salon B (2nd Floor)
Chair: Lisa Robinson

8:30 am   **W1-B.1**
The Benefits and Costs of U.S. Employer COVID-19 Vaccine Mandates
Lisa Robinson
Harvard University

8:50 am   **W1-B.2**
Fatal Flaws in the U.S. Defense Department's Climate Risk Analysis and Military Service-based Implementation
Richard Belzer
Good Inentions Paving Co.

9:10 am   **W1-B.3**
Modeling the equitable deployment of solar+storage-powered community resilience hubs across California
Patrick Murphy
PSE Healthy Energy

9:30 am   **W1-B.4**
Security and safety risk concepts reconsidered ñ Case of Customs and Border Management
Marja Ylonen
University of Stavanger

9:50 am   **W1-B.5**
Organizational Absorptive Capacity and Resilience Under Compound Threats: Learning from Federal Agency Perspectives
Emily Wells
Carnegie Mellon University

8:30 AM – 10:00 AM

W1-C: Roundtable: ESG Tipping Point and Transforming Risk Decision Making
Grand Ballroom Salon C (2nd Floor)
Chair: Charles Redinger

Few topics are more visible in organizational life than ESG (environment, social, governance). ESG roots go back to the 1980s with a focus on reporting for financial and investor purposes. Over the past 10 or so years, there has been rapid acceleration beyond these roots.

The 2020 pandemic, along with a bundle of issues, including diversity, equity, and inclusion (DE&I), have increased attention on the "social" in ESG. Disclosure and reporting frameworks continue to evolve. Activities impacting this space include: an effort to develop a unified reporting framework by the recently formed International Sustainability Standards Board; U.S. Securities and Exchange Commission requirements to report on human capital issues; and, the development of capitals- and integrated-thinking in organizational decision making as seen in the Capitals Coalition and Value Reporting Foundation.

In these development, little attention is being given to framing ESG in terms of risk, whether to organizations, or people associated with them (e.g. workers, consumers, community members).

This roundtable provides an overview of the ESG space from both a traditional perspective, as well as aspects of how it is evolving post-2020. After this, attention shifts to risk decision making implications to the organization, workers, consumers, and communities. Topics discussed are: double materiality, risk transfer, value accounting, capitals thinking, integrated thinking, risk metrics, Total Worker Health, Culture of Health for Business, and application of SRA's Risk Analysis Quality Test (RAQT) to ESG decision making.

Panelists
- Frank Hearl
- Mary O'Reilly
- Cristina McLaughlin
- Alan Rossner

8:30 AM – 10:00 AM

W1-D: Life Expectancies and Valuing Health Risks
Grand Ballroom Salon D (2nd Floor)
Chair: Roger McClellan

8:30 am   **W1-D.1**
Monetary values of increasing life expectancy: sensitivity to shifts of the survival curve
James Hammitt
Harvard University

8:50 am   **W1-D.2**
Health Risks of Emissions of Internal Combustion Engines: ¨A Success Story Joining Science, Technological Developments and Policy
Roger McClellan
Self

9:10 am   **W1-D.3**
Industrial air pollutant emissions and mortality from Alzheimer's disease in Canada
Sabit Cakmak
Health Canada

9:30 am   **W1-D.4**
Risk Forecasting of Carbon Dioxide Emissions from Power Plants in Kuwait using US EPA, IPCC, and Machine Learning Methods
Sharaf AlKheder
Kuwait University

8:30 AM – 10:00 AM

W1-E: Roundtable: Public Health Risk Modelling & Communication in the time of COVID-19: What went right and what went wrong?

Meeting Room 8 (3rd Floor)

Chair: Ainsley Otten

Almost three years into the SARS-CoV-2 pandemic we are still observing many different approaches by health authorities with respect to their use of and communication to the public of COVID-19 quantitative modelling. In this roundtable session, panelists will discuss successes and failures of public health risk modelling and communication regarding COVID-19 to date, in the context of case studies of various regions and as approaches evolved during the pandemic. Questions and comments from the audience are welcomed, as an engaging discussion which references many experiences is the goal of the session, to establish lessons learned from this unique perspective of SRA members and the panelists.

Panelists
- Mark Weir
- Jade Mitchell
- Haoran Chu
- Dominic Balog-Way

8:30 AM – 10:00 AM

W1-F: Plastics, Synthetic Biology, Polymers, and Combustion

Meeting Room 9 (3rd Floor)

Chair: Margaret MacDonell

8:30 am   **W1-F.1**
Predicting properties that influence end-of-life environmental fate to inform the design of novel polymers
Kevin Hickey
Argonne National Laboratory

8:50 am   **W1-F.2**
Regulatory frameworks for synthetic biology in mining industry: a comparative study
Artem Anyshchenko
The University of Queensland

9:10 am   **W1-F.3**
Microplastics, Summary of Human Health and Ecological Effects and Risk Assessment Approach
Jenny Phillips
TRC

9:30 am   **W1-F.4**
Priority safety questions for cultured meat: the perspectives from producers and regulators
Kora Kukk
Vireo Advisors LLC

8:30 AM – 10:10 AM

W1-G: Symposium: The Role of Risk Assessment and Benefit-Cost Analysis of Food Traceability

Meeting Room 10 (3rd Floor)

Chair: Cristina McLaughlin

8:30 am   **W1-G.1**
FDA's Risk-Ranking Model for Food Tracing (RRM-FT) to Inform the Development of Traceability Regulations.
Yuhuan Chen
FDA Center for Food Safety and Applied Nutrition

8:50 am   **W1-G.2**
Estimating Public Health Benefits from Food Traceability
Aliya Sassi
US Food and Drug Administration

9:10 am   **W1-G.3**
Use of Expert Elicitation to Address Data Gaps in Benefit-Cost Analysis
Aylin Sertkaya
Eastern Research Group, Inc.

9:30 am   **W1-G.4**
Estimating Food Traceability Costs
Michael Black
US Food & Drug Administration

9:50 am   **W1-G.5**
Benefits from Avoiding Overly Broad Recalls of Certain Foods Following FDA Issued Public Health Advisories
Cristina McLaughlin
Food & Drug Administration

10:30 AM – 12:10 PM

W2-A: Risk Tradeoffs in Policy and Technology

Grand Ballroom Salon A (2nd Floor)

Chair: Gianluca Pescaroli

10:30 am   **W2-A.1**
Technology deployment and information disclosure in the face of a strategic threat
Kyle Hunt
University at Buffalo

10:50 am   **W2-A.2**
Core principles for assessing the "goodness" of policies on risk
Scarlett Tannous
Paris Dauphine University – PSL

11:10 am   **W2-A.3**
Identifying common points of failures in society for preparing to cascading crises
Gianluca Pescaroli
University College London

11:30 am   **W2-A.4**
An integrated marine mammal risk assessment and monitoring system for the Canadian Armed Forces
Andrew Day
Defence Research and Development Canada

11:50 am   **W2-A.5**
Social-Ecological RAS Site Suitability: Exploring the social, ecological, and spatial dimensions of recirculating aquaculture system development in Maine, United States
Nathan Smith
University of Maine

10:30 AM – 12:00 PM

W2-B: Roundtable: Why We Need an SRA Chapter for the MENA Region
Grand Ballroom Salon B (2nd Floor)
Chair: Jacqueline MacDonald Gibson

Risk analysis is needed for effective governance, equitable outcomes and institution-building in the Middle East and North Africa (MENA) region. Current global challenges are accelerating the need for collaboration on crucial issues such as food supply, energy and security. Risk governance, institution-building and justice have special resonance both conceptually and practically: in the post "Arab-spring" environment improving risk governance has been particularly important. Institution-building and risk governance is also needed to better address the risks and benefits of technological options, for instance in the energy sector (from oil to solar) or to address public health challenges and emergencies (e.g. COVID-19, antimicrobial resistance, injuries and heat-related illness, ambient air quality, incl. sand/dust storms). The goal of the roundtable is to continue an deepen the exchange that was started in 2021 as explore the issues that will be discussed at the next SRA World Congress Marrakech 2024. This session will be a milestone for building new MENA chapter.

Panelists
- Frederic Bouder
- Nouh El Harmouzi
- Ahmed El Awady
- Jens Thomsen
- Amal Mubarak Madhi

10:30 AM – 12:10 PM

W2-C: Decision-making for Climate Change Adaptation
Grand Ballroom Salon C (2nd Floor)
Chair: Mitchell Anderson

10:30 am   **W2-C.1**
The role of past experience and concern about the future in adaptation decisions
Robyn Wilson
The Ohio State University

10:50 am   **W2-C.2**
Place detachment, psychological distress, and climate migration
Nina Berlin Rubin
Stanford University

11:10 am   **W2-C.3**
Household flood adaptation dynamics and the intention - behavior gap
Brayton Noll
TU Delft

11:30 am   **W2-C.4**
Assessing risk management policy's equity implications based on FEMA disaster aid in the gulf of mexico region
Scott Kalafatis
Chatham University

11:50 am   **W2-C.5**
Equitable and effective decision-making: utilising risk curves to identify social disparities and support adaptive decisions (S57)
Mitchell Anderson
University of Canterbury

10:30 AM – 12:10 PM

W2-D: Chemicals and Human Health Risks
Grand Ballroom Salon D (2nd Floor)
Chair: Margaret McArdle

10:30 am   **W2-D.1**
Recommended Oral Reference Values for Risk Assessment of Copper
Margaret McArdle
Exponent

10:50 am   **W2-D.2**
Cadmium physiologically based pharmacokinetic (PBPK) models for forward and reverse dosimetry: Review, evaluation, and adaptation to the U.S. population
Jane Van Doren
FDA Center for Food Safety and Applied Nutrition

11:10 am   **W2-D.3**
Bayesian benchmark dose modeling methods for epidemiological dose-response assessment using cohort studies
Francesco De Pretis
University of Modena and Reggio Emilia

11:30 am   **W2-D.4**
Children's risk to lead exposure does not diminish as they age: implication for routine child blood lead testing
Michelle Del Rio
Indiana University-Bloomington

11:50 am   **W2-D.5**
Ethylene Oxide, What Health Effects? What Should You Know?
Jenny Phillips
TRC

10:30 AM – 12:00 PM

W2-E: Roundtable: Convergence and Collaboration: A Conversation on the Role of Risk Communication in Transdisciplinary Research and Practice
Meeting Room 8 (3rd Floor)
Chair: Laura Rickard

In 2016, the U.S. National Science Foundation (NSF) recognized "convergence research" as one of "10 Big Ideas for Future NSF Investments." Traditionally trained to communicate within disciplinary "silos," researchers who conduct convergence research to investigate compelling problems—such as addressing ocean acidification, managing a pandemic, or developing AI that is trustworthy—collaborate with colleagues and practitioners outside of their disciplinary homes to integrate and develop new ways of thinking. Such research is expected to be "driven by a specific and compelling problem" through "deep integration across disciplines."

How does risk communication research fit into such interdisciplinary (i.e., synthesizing two or more disciplines, often establishing new, integrated knowledge) and transdisciplinary (i.e., synthesizing two or more disciplines to transcend the individual disciplines, with researchers and stakeholders sharing roles and acquiring new skills) collaborations? How do (and should) contemporary risk communication scholars and practitioners navigate these complex projects and relationships? In this roundtable, five prominent risk communication experts will discuss their views.

Panelists
- Cindy Jardine
- Nick Pidgeon
- Cara Cuite
- Julie Demuth
- Pascal Haegeli

10:30 AM – 12:00 PM

W2-F: Submarines, Satellites, Pipelines and Risks of Big Projects

Meeting Room 9 (3rd Floor)

Chair: Scott Ferson

10:30 am   **W2-F.1**

A demonstrative case study on using the SRA Risk Analysis Quality Test in mega construction project management

John Lathrop
Decision Strategies, LLC

10:50 am   **W2-F.2**

False confidence: when satellites go bump in the sky

Scott Ferson
University of Liverpool

11:10 am   **W2-F.3**

Characterizing climate risk in the mortgage and securitization markets

Janet Li
HUD

10:30 AM – 12:10 PM

W2-G: Symposium: Food Safety Risks, Disease Burden, and Technological and Behavioral Solutions

Meeting Room 10 (3rd Floor)

Chair: Felicia Wu

10:30 am   **W2-G.1**

A Tale of Two Aflatoxins: Cancer Risk in Maize and Peanuts vs. in Milk and Dairy

Felicia Wu
Michigan State University

10:50 am   **W2-G.2**

Effect of Foodborne Illness Related Outbreaks and Recalls on Consumption of Low-Moisture Foods

Scharff Robert
Ohio State University

11:10 am   **W2-G.3**

"Do Not Eat Raw Dough" – A Case Study of Communicating Food Safety Risk with Consumers

Han Chen
Purdue University

11:30 am   **W2-G.4**

Foodborne Illness Outbreaks in Flour and Flour-Based Food Products from Microbial Pathogens in the US and Their Economic Burden from 2001-2021

Rubait Rahman
Michigan State University

11:50 am   **W2-G.5**

A review of outbreaks associated with consumption of milk and cheese products in the United States, 2000ñ2020

Patricia Hsu
Michigan State University

1:30 PM – 3:00 PM

W3-A: Roundtable: Major Questions at the Supreme Court: Implications for Risk Analysis

Grand Ballroom Salon A (2nd Floor)

Chair: Jonathan Wiener

The last year has seen a number of important – and often controversial – Supreme Court cases, including several where risk analysis has played a critical role. These cases include NFIB v. OSHA, where the Supreme Court struck down OSHA regulations regarding COVID vaccines, and West Virginia v. EPA, where the Supreme Court addressed the authority of EPA to regulate climate change. Are these cases signals of a changing relationship between courts and agency risk analyses? What implications does the reasoning of the Court, including its turn towards the "major questions" doctrine, have for the future of risk analysis? Legal and policy experts discuss and debate.

Panelists

- Jonathan Adler
- Elissa Gentry
- Gary Marchant
- Jonathan Nash
- Jonathan Wiener

1:30 PM – 3:00 PM

W3-B: Applied Risk Analysis & Management

Grand Ballroom Salon B (2nd Floor)

Chair: Yin Huang

1:30 pm   **W3-B.1**

Linking risk analysis with risk management: The cases for control or influence

Robert Waller
Protect Heritage Corp.

1:50 pm   **W3-B.2**

Developing Web Applications for Expedited Risk Assessment for Transfusion-Transmitted Diseases

Yin Huang
US FDA

2:10 pm   **W3-B.3**

The challenges of evaluating cumulative impact from projects located near environmental justice areas

Sonja Sax
Epsilon Associates

2:30 pm   **W3-B.4**

Prediction markets for critical infastructure risk assessment

Benjamin Bonin
Sandia National Laboratories

1:30 PM – 3:00 PM

W3-C: Critical Infrastructure Risk and Resilience
Grand Ballroom Salon C (2nd Floor)
Chair: Damien Serre

1:30 pm   **W3-C.1**
Assessing the Vulnerability of Mobile Broadband Infrastructure to Climate Hazards using Crowdsourced Open Data
Edward Oughton
George Mason University

1:50 pm   **W3-C.2**
Critical Infrastructure Network (CIN) resilience: 20 years of research for what?
Damien Serre
Avignon UniversitÈ

2:10 pm   **W3-C.3**
Integrating climate and cyber stressors for assessment of critical infrastructure vulnerabilities
Diane Henshel
Indiana University

1:30 PM – 3:00 PM

W3-D: Artificial Intelligence
Grand Ballroom Salon D (2nd Floor)
Chair: Seth Guikema

1:30 pm   **W3-D.1**
How the narrative of risks regarding the use of AI is communicated at the European level
Anca Rusu
Dauphine University

1:50 pm   **W3-D.2**
(Re)Conceptualizing the trustworthiness of AI as perceptual and context-dependent
Christopher Wirz
National Center for Atmospheric Research

2:10 pm   **W3-D.3**
Can natural language processing do it better? Results from interdisciplinary development of an automated coding tool for community resilience, climate adaptation, and sustainability planning documents
Emily Walpole
National Institute of Standards and Technology

1:30 PM – 3:00 PM

W3-E: Risk Governance and Community Resilience
Meeting Room 8 (3rd Floor)
Chair: Yue Ge

1:30 pm   **W3-E.1**
Integrating Stakeholders into Risk Mitigation Decisions for Infrastructure Resilience in the Context of Natural Hazard Disruptions
Rae Zimmerman
New York University

1:50 pm   **W3-E.2**
An Interdisciplinary and Community-Engaged Approach to Community Resilience Research
Yue Ge
University of Central Florida

2:10 pm   **W3-E.4**
Risk governance approach to examine perceived risks, benefits, and mitigation measures in Australian clinical genomics
Yuwan Malakar
Commonwealth Scientific & Industrial Research Organisation

1:30 PM – 3:00 PM

W3-F: Microbes, The Environment, and Engineered Systems
Meeting Room 9 (3rd Floor)
Chair: Vincent Chigor

1:30 pm   **W3-F.1**
The effects on antimicrobial resistance of species-specific antimicrobial sales verses total antimicrobial sales
Andrew Estrin
Food and Drug Administration

1:50 pm   **W3-F.2**
Considering Pathogen Persistence within Surface Water Risk Assessments
Kara Dean
Michigan State University

2:10 pm   **W3-F.3**
Detection and quantitative microbial risk assessment of pathogenic Vibrio cholerae in an urban stream used for drinking, domestic, recreational and fresh produce irrigation
Vincent Chigor
University of Nigeria

2:30 pm   **W3-F.4**
A Generalizable Model for Pathogen Persistence in Surface Waters
Kara Dean
Michigan State University

1:30 PM – 3:00 PM

W3-G: Symposium: Food Safety Risk Communication ñ Introducing The APEC Food Safety Risk Communication Framework and Associated Guidelines

Meeting Room 10 (3rd Floor)

Chair: William Hallman

1:30 pm   **W3-G.1**
Moderator
Clare Narrod
Universit of Maryland

1:50 pm   **W3-G.2**
Introducing the APEC Food Safety Risk Communication Framework and Associated Guidelines
Clare Narrod
Universit of Maryland

2:10 pm   **W3-G.3**
Reaching Vulnerable Populations and Getting Them to Take Action
William Hallman
Rutgers University

2:30 pm   **W3-G.4**
Using Social Media Engagement for Food Safety Risk Communication
Amy Philpott
Watson Green LLC, Consultant

3:30 PM – 5:00 PM

W4-A: Roundtable: Is There Something Else the Governments Could do to Improve their Communication with the Civil Society when Communicating about an Emerging Technology?

Grand Ballroom Salon A (2nd Floor)

Chair: Anca Rusu

As part of a research conducted to observe how various actors communicate about the use of AI, it has been observed that there is a gap between what is communicated and what is perceived by the civil society. We propose a roundtable to understand why this is happening and how this perspective could be changed.

We have previously analysed various AI strategies and scientific articles to see how governments and academia speak about the use of AI, focusing primarily on the communication of opportunities and risks. This research was complemented by a survey constructed to see how civil society perceived the use of AI and how various actors communicated. It has been observed that, in terms of content, what has been communicated by the governments (EC and national governments), got to the public (e.g., there is not a significant gap between the available information).

Panelists
- Pia-Johanna Schweizer
- José Manuel Palma-Oliveira
- Myriam Merad
- Benjamin Trump
- Jonas Krieger

3:30 PM – 5:00 PM

W4-B: Roundtable: Risk Science Perspectives on Information, Misinformation and Disinformation

Grand Ballroom Salon B (2nd Floor)

Chair: Seth Guikema

Misinformation and disinformation are major challenges for risk assessment, risk communication and risk handling. However, the terms misinformation and disinformation in relation to risk are not easily defined and interpreted. When it comes to risk, there is in many cases no reference for what is the truth – the risk magnitude needs to be evaluated on the basis of analysis and judgments. This panel will discuss this issue from two perspectives. First, how can we use a risk perspective to better understand and define misinformation and disinformation? What do these terms mean in relation to risk description and risk science? Second, how can we use risk science to confront and diffuse misinformation and disinformation in the context of conducting a risk analysis and choosing among risk management alternatives? What is the role of risk communication in this combating misinformation and disinformation, and how is this founded in the foundations of risk science?

Panelists
- Dominic Balog-Way
- Terje Aven
- Katherine McComas

3:30 PM – 5:10 PM

W4-C: Natural Hazards and Infrastructure

Grand Ballroom Salon C (2nd Floor)

Chair: Youngjun Choe

3:30 pm   **W4-C.1**
Water outage predictions for natural hazards using synthetic water distribution systems.
Zaira Pagan Cajigas
University of Michigan

3:50 pm   **W4-C.2**
Analyzing disaster preparedness and mitigation strategies using synthetic water distribution system models
Rosalia Otaduy-Ramirez
University of Michigan

4:10 pm   **W4-C.3**
A method for identifying locations and times of hurricane evacuations from mobile phone location data
Valerie Washington
University of Michigan

4:30 pm   **W4-C.4**
Estimating disaster recovery times of interdependent infrastructure systems
Youngjun Choe
University of Washington

4:50 pm   **W4-C.5**
Studying the Effect of Built Environment on Traffic Accidents Risk with Random Parameter and Generalized Ordered Logit Models
Sharaf AlKheder
Kuwait University

3:30 PM – 5:00 PM

W4-E: Informing Exposure: PFAS and other Chemicals

Meeting Room 8 (3rd Floor)

Chair: Lynne Haber

3:30 pm   **W4-E.1**
Guidance document for use of human biomonitoring data for exposure assessment
Lynne Haber
University of Cincinnati

3:50 pm   **W4-E.2**
Visualizing trends and customizing analyses of NIOSH Pocket Guide data
Christine Whittaker
NIOSH

4:10 pm   **W4-E.4**
Machine-learned Bayesian networks for assessing risks of exposure to short-chain PFAS in groundwater
Runwei Li
Indiana University, Bloomington

3:30 PM – 5:00 PM

W4-F: Symposium: Emerging Risks and Consumer Products

Meeting Room 9 (3rd Floor)

Chair: Christopher Cummings

3:30 pm   **W4-F.1**
Emerging governance issues for biotechnology enabled food and agriculture products
Emily Wells
Carnegie Mellon University

3:50 pm   **W4-F.2**
Biotechnology innovation and emerging ethical, legal, social, and environmental Implications (ELSEI)
Benjamin Trump
USACE

4:10 pm   **W4-F.3**
Consumer Product Risk Screening Tool
Amy Rosenstein
USACE

4:30 pm   **W4-F.4**
Collaborative Approaches for Addressing Potential Health Risk from Emerging Chemicals and Consumer Products
Treye Thomas
CPSC

Workshops

8:30 AM - 5:30 PM

Dose-Response Modeling: Benchmark Dose Modeling Approach's Using EPA's BMDS Online and NIEHS' ToxicR

J. Allen Davis, Matthew Wheeler, Jay Zhao, Andy Shapiro, Todd Blessinger and Jeff Gift

Meeting Room 9 (3rd Floor)

For years, EPA's Benchmark Dose Software has been available as a stand-alone Windows desktop application for the dose-response analysis of toxicological data for risk assessment. In addition to the updated BMDS Excel release in 3.3; the EPA and NIEHS have expanded dose-response capabilities to Online (Web) and an R-package (free software for statistical computing) environments. BMDS-Online reimplements the existing BMDS software in a web-based application, allowing users to run BMDS on any computer with access to the internet. ToxicR is a R-based Bayesian modeling platform developed by NIEHS/NTP that "untethers" BMDS and other models from standard parameterizations, expanding its capabilities for research applications.

This workshop will cover dose-response analyses (frequentist and Bayesian); participants will learn and practice (through hands-on exercises) dose-response modeling of dichotomous and continuous response data using BMDS-Online. Following these introductory analyses, participants will learn and practice the use of Bayesian models, including the application of a Bayesian framework for model averaging using ToxicR. Participants will explore model averaging approaches for dichotomous and continuous data, including new model averaging capabilities for continuous data that include the European Food Safety Authority's (EFSA) suite of continuous models currently only available in ToxicR.

The research functionality and modeling capacity of the ToxicR platform will be demonstrated. Hands-on exercises in ToxicR will be provided. Participants will be shown how to modify prior assumptions and perform sensitivity analyses to investigate the default prior's effect on a given analysis. Additional features of the package that allow for scripted batch processing, advanced graphics, and custom BMD analysis will also be highlighted.

8:30 AM – 5:30 PM

Monte Carlo Simulation and Probability Bounds Analysis in R or Python with Hardly and Data

Scott Ferson and Nick Gray

Meeting Room 10 (3rd Floor)

This full-day workshop features hands-on examples worked in R or Python (whichever you prefer) 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.