出國報告（出國類別：會議）

參加「2023 SRA Annual Meeting」

服務機關： 環境部環境管理署

姓名職稱： 張芯瑜助理環境技術師

派赴國家/地區： 美國/華盛頓特區

出國期間： 112 年 12 月 8 日至 112 年 12 月 16 日

報告日期： 113 年 3 月 11 日

摘 要

風險分析學會（Society for Risk Analysis，簡稱 SRA）是一個多學科、跨學科的學術性國際學會，為了對風險分析感興趣的人士提供一個開放的論壇。風險分析的廣義定義包括風險評估、風險特徵描述、風險溝通、風險管理和與風險相關的政策，涉及個人、公共和私營部門組織以及當地社會所關注的風險。

風險分析專業小組主要可區分為 16 個小組，每個專業小組都會舉辦網路研討會、小組討論及其他專業會議，提供小組成員分享相關經驗，如與我國推動風險管理相關之「風險溝通」及「風險政策及法規」。

風險溝通專業小組（The Risk Communication Specialty Group，簡稱 RCSG）主要推動專業人員與受眾之間風險資訊的溝通，包括風險認知民眾參與、大眾媒體對風險的了解，以推動風險溝通有效發揮作用。

風險政策與法規專業小組（The Risk Policy and Law Specialty Group，簡稱 RP&L）主要由科學家、社會學家、律師、工程師及其他對風險分析、公共政策及法律感興趣的人員組成。小組目標以闡明與風險相關之立法行為、監管規則、條約、監督及查核機制、司法程序及其他法律所產生之問題進行精進與討論。

本次會議積極參與與我國推動風險管理相關之議題，透過研討會、海報平台、工作坊等方式蒐集國際間目前風險管理及溝通相關資訊與交流，並以「廢棄煉礦場土壤污染場址推動風險管理與土地再利用」為議題投稿參加海報平台發表。

目次

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 月第二周舉辦年度會議(SRA Annual Meeting)，2023 年度於 12 月 10~14 日在美國華盛頓舉辦，本次會議主題為「以『適度懷疑』應用於當今的風險分析和決策」，起源自《特洛伊羅斯與克瑞西達》，一部以動蕩的特洛伊戰爭為背景的戲劇。風險研究的目的是闡明可能影響企業的各種可能性，並提供一些指導，說明如果選擇特定的行動，如何避免、預防、轉移或減輕有害後果。只要審慎考慮風險和不確定性，駕馭不確定性以追求有利機會就是一項崇高的冒險。

風險分析是一門獨特的科學，涵蓋地方、區域、國家或全球層面的個人、公共和私營部門組織以及社會所關注的風險背景下的風險評估、感知、溝通、管理、治理和政策。獨特的是，風險分析適用於生活各個方面，包括日常系統、政治、氣候變遷、自然現象、醫療等，且從自然科學、社會科學到人文學科的各種學科的基礎。

風險科學方法用於做出明智的決策，並透過數據中的模式模擬，解釋隨機性和不確定性，以便就正在研究的主題或問題得出結論並做出決策。為了解決複雜的社會問題，風險分析的途徑和方法與統計學、心理學、社會科學、工程、醫學等許多學科和領域的知識相結合。大多數全球性問題需要風險分析中的多學科和跨學科方法和活動。

風險科學研究是針對風險分析概念、原則和方法進行的，目的是概念化和描述風險並實施其見解。因此，風險分析不僅是一門支持與生活各種因素相關的風險知識生成的科學，而且是一門產生與如何理解、評估、表徵、交流、管理和治理風險。

二、過程

(一) 會議資訊

本次會議於美國華盛頓特區威斯汀酒店舉行，因華盛頓特區涵蓋美國各個聯邦政府機關及研究機構等要地，故 SRA 固定每 2~3 年輪迴至華盛頓特區舉辦年度會議，又因本次為新冠肺炎疫情(COVID-19)後第一次年度會議，依據主辦單位統計，本次會議參與與會人數約達 600 多人，涵蓋達 29 個國家。

會議辦理形式，除以圓桌會議、工作坊、主題演講、研討會、口頭報告、海報平台報告等形式交叉辦理外，討論議題相當多元，涉及人體健康、環境生態、天災氣候、食物安全、醫療，甚至是交通運輸面向之風險相關內容（如風險評估、風險特徵描述、風險認知、風險溝通、風險管理、風險治理等），會議整體相當豐富，即每天有涉及數十種不同領域主題之討論或發表會議可供與會人員自行選擇參與；本次參與會議行程如表 1 所示，會議期間各會議及議題詳如附錄一。

表 1　本次參與 SRA Annual Meeting 會議行程

日期	參訪行程
112.12.08 112.12.09	啟程，由桃園中正國際機場出發抵達美國隆納雷根華盛頓國家機場
112.12.10	報到暨簡易歡迎晚會
112.12.11	參加「2023 SRA Annual Meeting」 1.開幕式主題演講「氣候變遷對食品安全之影響及解決方案」 2.參與海報平台-議題「醫療保健、職業及環境中的健康風險議題」(以「廢棄煉礦場土壤污染場址推動風險管理與土地再利用」為題進行報告) 3.參與海報平台-議題「風險感知與溝通」 4.參與海報展示暨正式歡迎晚會
112.12.12	參加「2023 SRA Annual Meeting」 1.主題演講「如何應用 AI 進行風險管理？」 2.參與研討會「公部門應用風險溝通之挑戰與成果」
112.12.13	參加「2023 SRA Annual Meeting」 1.主題演講「減少和傳達風險的根本原因分析：太空人和工程師在醫療保健管理方面的經驗教訓」 2.參與研討會「風險圖像、感知與溝通」 3.參與研討會「PFAS 和塑膠—風險溝通與新技術」
112.12.14	參加「2023 SRA Annual Meeting」工作坊會議
112.12.15	回程，由美國隆納雷根華盛頓國家機場出發
112.12.16	抵達臺北

(二) 參與內容

1. 本署以「Implementation of Risk Management and Brownfield Reuse on Abandoned Mining Sites with Soil Contamination 廢棄煉礦場土壤污染場址推動風險管理與土地再利用」為題目投稿，並於會議第 1 日（12 月 11 日）下午之「Poster Platform: Health Risks in Healthcare, Occupational, and Environmental Settings 醫療保健、職業及環境中的健康風險議題」環節中進行海報平台口頭報告，透過說明「原禮樂煉銅廠」及「台金公司及所屬廢煙道」兩處污染整治場址案例，介紹我國風險評估、管理及溝通之制度與場址實際規劃執行方案。

   其中因場址鄰近觀光景點九份地區，針對採行風險管理措施如何結合土地再利用用途，以及如何與當地居民進行風險溝通等議題，相關與會人員較感興趣並提問，其討論情形如圖 1，本署海報展示如圖 2。

圖 1　本署投稿發表-與與會人員討論與意見交流

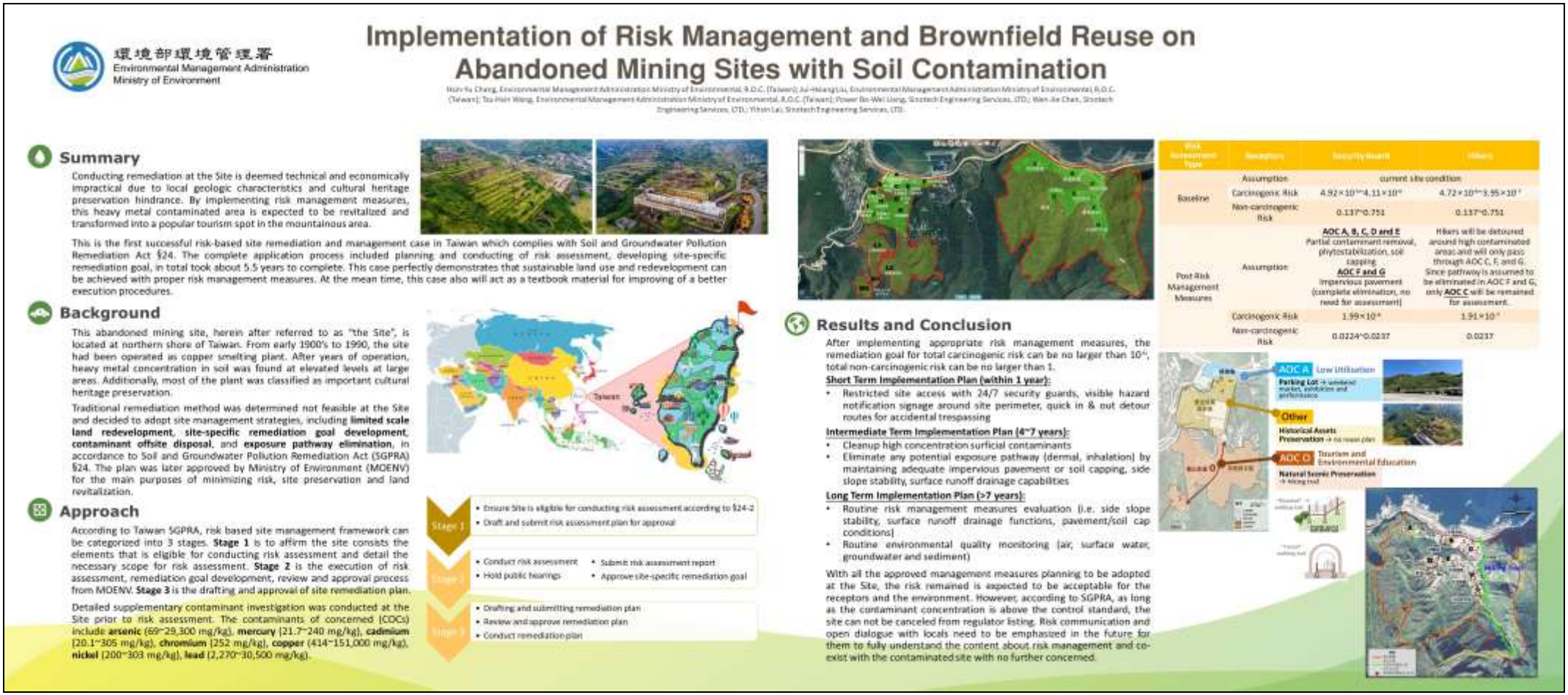


圖 2　本署投稿發表-海報展示內

2. 主題演講(Keynote Sessions)共計 3 場次，為針對全球性重點趨勢氣候變遷影響與 AI 運用作為主軸進行發表及討論，各段演講內容簡述如下：

(1) 第 1 場開幕式主題演講以「How Climate Change Will Affect the Safety and Security of our Food, and Unique Solutions 氣候變遷對食品安全之影響及解決方案」為題，由 Michael Ferrari 及本屆 SRA 主席 Felicia Wu 為本(2023)年度風險年會揭開序幕，依據政府間氣候變遷專門委員會(IPCC)最新評估報告指出，維持全球可靠且安全的食品供應為氣候變遷之主要挑戰之一，探討氣候變遷如何損害全球的食品安全，以及如何利用現有的供應鏈改善食品分配及解決方案，避免氣候變遷對人類及食品安全之影響，會議情形如圖 3 所示。

(2) 第 2 場次則是以「Risk Management of AI: How Should We Prepare?如何應用 AI 進行風險管理？」為題，說明目前 AI 已廣泛使用在人類生活環境，主要探討 AI 如何應用於風險分析，以及如何作為未來風險分析、風險管理及風險溝通之工具。

(3) 第 3 場次以「Plenary Session and Lunch - Root Cause Analysis to Reduce and Communicate Risks: Lessons from an Astronaut and Engineer in Healthcare Management 減少和傳達風險的根本原因分析：太空人和工程師在醫療保健管理方面的經驗教訓」為題，深入探討 20 世紀 70 年代美國太空人的經驗教訓，轉向根本原因分析，用於了解當前醫療保健系統中的風險，例如與患者安全違規相關的風險，以及了解手術和其他醫療保健問題的根本原因有助於預防發生，並改善整個醫療保健系統壽命。

圖 3、會議情形（開幕式演講）

3. 其餘會議時間則採多元形式辦理，於同個時段分列 8 個場地地點進行不同領域之座談會、小型圓桌討論或發表會議，提供與會人員自行依專業領域或興趣選擇參與，本署優先以涉及「風險溝通」及「新興污染物」兩項議題為主要參與方向；另外因新冠肺炎疫情(COVID-19)自 2020 年起於全球大流行，部分以新冠肺炎疫情作主題進行相關研究或討論；綜整本署所參與各段會議內容簡述如下，會議情形如圖 4 及圖 5 所示。

(1)「風險溝通」議題

A. 座談會「Risk Communication in the Public Sector: Challenges and Successes in Applying Science Across Government 公共部門風險溝通：跨政府應用科學的挑戰與成功」時段中，計有 5 個子題說明不同公部門單位之執行經驗及分享，簡述與本署關切領域較合適之內容如下：

於子題「A Risk Communication Training Platform for the Public Sector, Built on Best Practices from the Fields of Risk Communication and Adult Learning，建構風險溝通和成人學習領域最佳實踐於公共部門風險溝通培訓平台」中，於美國環保署每個工作人員幾乎都以某種工作方式參與風險溝通，尤其是公共部門員工須因應不同受眾於面臨不同風險所提出需求而進行相關溝通作業，但基於工作人員技能培訓部分較少見，故美國環保署特研擬制定一套風險溝通策略框架，框架內容除以基礎科學知識作為培訓基礎外，與同事或民眾等人員間之結合以及有效訊息正確製作與傳遞才是培訓框架的主軸，認為藉由此類型框架內容才能確實提高員工風險溝通技能，以有效實現公部門機構保護人類健康和環境的使命。

於子題「Development and Use of the Framework for Communicating Benefits, Risks and Uncertainties for Medical Products 醫療產品傳達益處、風險和不確定性之框架開發和使用」中，美國食品和藥物管理局(FDA)職責為向公眾傳達藥品安全訊息，於傳達作業上常面臨多重挑戰，如藥物病例或臨床文獻資料過於繁雜及深奧，公眾無法閱讀甚至是理解，故 FDA 特研擬制定一套框架作為藥物和醫療產品溝通範例指引，透過下述步驟執行：(a)確認並界定醫療產品之益處、存在風險以及其不確定性因素;(b)制定溝通原則；(c)統整原則並轉化為合宜之「建議訊息」; (d)辦理試驗研究，以評估「建議訊息」對消費者認知與行為結果的影響；(e)滾動式調整「建議訊息」內容；爰此，FDA 以某種藥物作範例，透過此框架執行完整步驟，回饋結果顯示確實能有效降低不正確訊息之認知。

B. 海報平台「Trauma-informed risk communication and community engagement 創傷知情風險溝通與社區參與」研究，此篇為美國環保署橡木嶺科學與教育研究所（Oak Ridge Institute for Science and Education, 簡稱 ORISE）所發表，已知創傷對大腦化學反應、信任、對權威人物的感知和認知思考等認知和健康造成一定程度之影響，該研究所基於美國環保署以往執行超級基金或社區振興等計畫經驗，顯示遭受嚴重創傷的社區傳達風險並參與其中更具挑戰性，獲致結論為創傷被認為是溝通最重要的受眾因素之一，但現階段風險溝通領域尚未考慮創傷與壓力反應等此面向所帶來的溝通影響。

(2)「新興污染物」議題

A. 討論會「PFAS and Plastics - Risk Communication and New Technologies PFAS 和塑膠-風險溝通與新穎技術」時段中，計有 4 個子議題發表分享，均以 PFAS 為例分享如何透過風險溝通取得民眾信任及溝通時所面臨之挑戰，簡述與本署領域或關切議題之內容如下：

於子題「Dreaded and unknown: online risk communication and polyfluoroalkyl substances (PFAS)可怕與未知：風險溝通與多氟烷基物質」中，敘述到基於環境與人類健康風險，對於多氟烷基物質(PFAS)的擔憂日益增加，美國雖有許多州已制定立法來限制，但且其影響的程度和嚴重程度仍然存在不確定性，因此許多美國人民渴望了解更多資訊。然目前有研究指出網站缺乏有關降低 PFAS 風險的可用資訊，故此研究透過比較不同的組織類型（例如政府與倡議網站），將記錄有關 PFAS 的書面和視覺交流的相似性和差異來討論，結果顯示由於數位管道是風險資訊的支柱，因此有必要進行研究以確定使用者可能在組織網站中遇到哪些資訊，反過來，風險從業者將能夠更好地提出策略溝通建議，以影響明智的決策並提高自我效能，故如何（或應該）傳達的可能會對風險認知和決策產生重要影響。

子題「Uncertain and relevant? How conflicting message influences information processing about PFAS contamination 不確定且相關？矛盾訊息如何影響有關 PFAS 污染資訊處理」中，該研究背景藉由招募 500 名參與者進行試驗，以全氟烷基物質和多氟烷基物質（簡稱 PFAS）污染資訊作為文章訊息基礎，透過讓參與者閱讀被隨機分配四種不同文章的其中一種，再讓參與者實際回饋所居住區的飲用水是否有受 PFAS 污染影響之試驗，以藉此瞭解訊息暴露對於溝通行為造成的影響。該研究結果顯示，人們於接觸到矛盾或衝突的訊息，會影響風險溝通後續行為的認知途徑，並導致不利的影響，包括對健康建議的困惑以及對醫學科學的信任度下降等因素，從而降低了人們採取預防行為的可能性。

子題「The Integration of microplastics and nanoplastics into large scale multiple stressor ecological risk assessments using San Francisco Bay and the Delta Region as a case study 以舊金山灣和德爾塔地區為例：微塑料和奈米塑料納入大規模多重壓力源生態風險評估，並」中，敘述到微塑膠和奈米塑膠是當前全球關注的問題，且已被視為海洋、河口和淡水系統污染物負荷的一部分，然而目前尚不清楚棲息在海洋、淡水或陸地系統的各種物種面臨的風險是什麼。該研究敘述表示，目前微/奈米塑膠使用的風險評估是以 1980 年代所制定物種敏感性分佈(species sensitivity distributions, SSD)，該用途宗旨為保護水生生物群落的水質標準，故評估此方法工具應是不足以評估如海洋這種具有多個其他輸入和端點的大型系統的風險。故該研究改以葉斯網路相對風險模型(Bayesian network relative risk models, BN-RRM)來估計輪胎磨損顆粒和其他微/奈米塑膠對舊金山灣造成的風險，雖於輪胎磨損顆粒和塑膠的估計濃度在微米和奈米範圍內，與其他類型的污染物相比，對魚類終點造成的風險較低，然而，此風險估計因素存在極大的不確定性，特別是在海洋環境中；結論顯示與舊有 SSD 工具導出的風險相比，使用 BN 模型的多重壓力源方法具有多種優勢且概念模型較明確。

(3)「新冠肺炎疫情(COVID-19)」議題

A. 座談會「Risk Visualization, Perception, and Communication 風險視覺化、感知與溝通」時段中，計有 5 個子題，針對新冠肺炎疫情為題之演講內容簡述如下：

於子題「The Dynamics of Fear: Exploring Logarithmic Changes in COVID-19 Risk Perception over Time in South Korea 恐懼的動態：探索韓國 COVID-19 風險認知隨時間的對數變化」中，敘述到藉於 COVID-19 大流行加深大眾對於個人行為能產生深遠的影響而有所認知，該研究主題為分析 COVID-19 病例數與韓國公眾風險感知之間的關係趨勢，分析在 COVID-19 爆發初期，僅少數病例就足以引起人們風險認知的大幅上升。然而中、後期儘管病例數量激增，但公眾的反應變得不那麼敏感，可被解釋為一種心理麻木現象，故研究結果顯示大眾的風險感知與 COVID-19 病例數並非線性相關，而是呈現對數相關；總結大眾常對日常風險表現不敏感（如車禍或糖尿病），對於新的、不熟悉的風險則具有高度敏感（如 COVID-19 早期階段），然而隨著時間推移，危險變得越來越普遍日常，人們開始對其變得不敏感。

於子題「Governance during Uncertainty: The role of governors and federalism in US disaster response during the COVID-19 pandemic 不確定時期的治理：於 COVID-19 流行期間州長和聯邦制在美國災難應變中的作用」中，主要探討美國於災難應變情況州級的差異，美國國家緊急管理系統允許各州，更重要的是地方政府對災害擁有自主權和所有權，透過緊急管理結構、公共衛生能力、法定框架和州長緊急權力四點，在備災和救災方面擁有相當廣泛的權力，同時在協調聯邦政府的救災行動和支持地方司法管轄區方面發揮關鍵作用，此機制始於卡崔娜颶風災難後。但透國 2020 年 COVID-19 大流行經驗後，反而暴露美國救災行動的重大弱點，凸顯出聯邦制的重要性以及美國支離破碎的公共衛生系統應對重大公共衛生緊急情況的能力有限，具體而言研究發現因為(a)權威、(b)能力和(c)官僚結構和流程的差異，進而解釋了為什麼美國各地的流行病應對措施以及最終結果各不相同。

B. 海報平台「Understanding and Tolerance in Communication about COVID-19 in Japan 日本對 COVID-19 溝通的理解與容忍」研究發表，此研究蒐集近 7,000 份 16 歲至 79 歲日本民眾問卷調查，透過兩種媒體使用方式（電視和網路、大眾媒體和網路新聞），於接觸相反意見的程度與透過理解相反意見而產生的容忍度呈正相關，結果顯示表明適時給予正確知識觀點之科學傳播，可促進對話並降低價值衝突，實現對具有多元價值的科學主題的建設性討論。

圖 4、會議情形（風險溝通議題座談會）

圖 5、會議情形（歡迎晚宴暨海報展示時段）

三、心得與建議

(一) 建議未來可探討有關 AI 應用於風險分析之可行性及其效益，作為評估污染場址風險管理作為之應用依據與參考，以 AI 輔以進行風險評估為目前國際間之最新趨勢，惟目前常見案例為災害或食品健康風險，對於運用在土壤及地下水污染場址上，目前尚未蒐整到任何研究案例。

於本署過往計畫執行成果曾發展過風險圖像分析系統，可以二維方式呈現區域性之現況風險分布情形，以利風險決策、風險管理與風險溝通作業。有鑑於國際間以逐步大量使用 AI 協助進行風險評估作業，我國未來亦可考慮整合既有之風險圖像分析系統、AI 模式與地下水傳輸模擬，研擬發展適合我國本土之土壤及地下水風險評估結果預測系統，為公司爭取更多計畫資源。

(二) 風險溝通方面，透過本次會議如環境污染物 PFAS、食品安全或流行病學等不同領域議題之分享，再次深切認知到一項核心理論，為公共部門有義務向眾多不同主題的受眾傳達有意義、易於理解的資訊;故於面臨各種不同受眾主體的風險溝通目標，以及對應不同受眾的需求，必須事先預想規劃並準確掌握到：要向誰傳達什麼信息，為什麼要這樣做，何時傳達，以及如何傳達等方式這四大要件，才得以視作有效的溝通；承上，建議我國未來可針對 PFAS 相關持久性污染物之風險評估與溝通議題進行研議，以降低未來可能引起之民眾恐慌與面臨之挑戰，且可參照公部門風險溝通之作法與案例執行模式，轉化為我國風險溝通教育訓練素材之一，作為本署未來可持續精進污染場址第一線人員（地方環保局承辦）之風險認知與溝通能力之參考。

(三) 於本次年會參與期間，亦與臺灣風險分析學會(Taiwan Society for Risk Analysis)現任（第六屆）理事長吳焜裕教授一同討論我國風險管理推動之未來趨勢動向，如圖 6 所示，吳教授提及該分區將於 2025 年主辦風險分析學會(SRA)亞洲區研討會議，並邀集本署屆時一同參與，藉時可瞭解亞洲各分區國家（日本、韓國及印度等）之風險管理發展與執行趨勢內容，有利於本署持續推動風險管理及風險溝通之執行與精進。

圖 6、會議情形（與 SRA 臺灣分區理事長吳焜裕教授討論及合影）

附錄一、參加「2023 SRA Annual Meeting」會議議程

SRA

SRA 2023

modest doubt is called the beacon of the wise

Conference Program

2023 Annual Meeting

Society For Risk Analysis Annual Meeting

2023 Conference Program • December 10-14

Table of Contents

2023 Council

President: Katherine von Stackelberg

President-Elect: Felicia Wu

Secretary: Janet Yang

Treasurer: Jonathan Welburn

Past President: Ragnar Lofstedt

Ex-Officio Students and Young Professionals Chair: Ben Rachunok

Executive Secretary: Brett Burk

Managing Director: Jill Drupa

Councilors

Sandra Alday

Douglas Bessette

Peg Coleman

Rui Gaspar

James Hammitt

Jade Mitchell

Roshanak Nateghi

Louie Rivers

Marja Ylonen

2023 Program Committee

Program Co-Chair: Felicia Wu

Program Co-Chair: Seth Guikema

Nancy Beck

David Johnson

Fabio Massacci

Allison Reilly

Jun Zhuang

Adam Zwickle

SRA Worldwide Headquarters

950 Herndon Parkway, Suite 450
Herndon, VA USA 20170
+1.703.790.1745; FAX: 703.790.2672
www.SRA.org, SRA@BurkInc.com

Venue and Room Information

Westin Washington DC
(formerly the Renaissance DC)
999 Ninth Street NW
Washington, DC 20001

2023 Award Winners

Distinguished Achievement Award
Terje Aven

Outstanding Practitioner Award
Alliya Sassi

Chauncey Starr Award
Roshanak Nateghi
Zachary Collier

Distinguished Educator Award
Jun Zhuang

Richard J Burk Outstanding Service Award
Seth Guikema

Fellow
Robin Dillon-Merrill
Jack Fowle
Rui Gasper
Cindy Jardine
Richard John
Robin Keller
Stanley Levinson
Kara Morgan

2023 Specialty Group Winners

Advanced Materials and Technologies
Kora Kukk

Applied Risk Management
Kairui Feng

Decision Analysis and Risk
Patrick Curran

Dose Response
En Yu Chen

Economics and Benefits Analysis
Brianna Bace

Engineering and Infrastructure
Zhiyuan Wei

Exposure Assessment
Po-Han Lin

Foundational Issues in Risk Analysis
Christopher Doehring

Justice, Equity and Risk
Fatima Umar

Microbial Risk Analysis
Kayla Shorter
Shuyi Feng
Syed Anjerul Islam

Occupational Health and Safety
Pei-Yi Chen

Resilience Analysis
Andrew Jin

Risk Policy and Law
Kasia Klasa

Security and Defense
Madison Smith

Student and International Travel Award Winners

Emma Anyika
Robert Baker
Logan Brunner
Katie Byrd
Chia Fen Chen
Stefano Chiaradonna
Vijay Chiluveru
Yu-Chan Chiu
Pamela Cisternas
Patrick Curran
Andrii Davydiuk
Francesco De Pretis
Christopher Doehring
Xinxia Dong
Michael Eber
Kairui Feng
Yihan Gao
Erica Goto
ChoongHee Han
Qian He
Ronnie E. Hill Jr.
Madison Horgan
Patricia Hsu
Wan-Ting Hsu
Maho Ishibashi
Elmo Juanara
Rajesh Kandel
Mahek Karamchandani
Maksim Kitsak
Seyram Pearl Kumah
Po-Han Lin
Megan Marcellin
Joshua McDuffie
Negin Moghadasi
Rachid Ouache
Zaira Pagan Cajigas
Chuanshen Qin
Rubait Rahman
Celine Robinson
Anca Rusu
Jose Scott
Prerna Shah
Olga Shashkina
Behnam Tahmasbi
Zhiyuan Wei
Shuo Yao
Yun Zhou

Committee Meetings and Events

Sunday, December 10

12:00 PM – 5:00 PM
Council Meeting and Lunch
Meeting Room 8/9

3:30 PM – 4:30 PM
Area Editors Meeting
Hickory

5:00 PM – 6:00 PM
Editorial Board Meeting
Hickory

5:00 PM – 6:00 PM
Student & New Member Orientation
Meeting Room 4

6:00 PM – 7:30 PM
Welcome Reception
Potomac Ballroom Salon I & II

Monday, December 11

7:00 AM – 8:00 AM
New Member, Student/Young Professionals Breakfast
Red Bud

12:10 PM – 1:25 PM
Specialty Group Meetings
See page 5

3:30 PM – 5:00 PM
Meeting for people interested in revising the Social Amplification of Risk Framework
Meeting Room 6

5:00 PM – 6:00 PM
World Congress Meeting
Hickory

Tuesday, December 12

7:00 AM – 8:00 AM
Grad Student Breakfast
Hickory

8:00 AM – 10:00 AM
Regional Organization Meeting
Meeting Room 6

12:00 PM – 1:30 PM
Business Meeting and Awards Lunch
Potomac Ballroom

6:00 PM – 9:00 PM
Council Meeting and Dinner
Red Bud

7:00 PM – 9:00 PM
Managing the Risks of AI in the Age of Misinformation
Off Site: National Press Club, 529 14th St NW, Washington DC

Wednesday, December 13

7:30 AM – 8:30 AM
Specialty Group Chair Meeting
Meeting Room 6

12:00 PM – 1:30 PM
Plenary Keynote and Lunch
Potomac Ballroom

12:00 PM – 1:00 PM
SRA Endowment Meeting
Hickory

Speaker Ready Room Hours

Sycamore Room

Sunday, December 10	2:00 PM – 5:00 PM
Monday, December 11	7:00 AM – 5:00 PM
Tuesday, December 12	7:00 AM – 5:00 PM
Wednesday, December 13	7:00 AM – 12:00 PM

Registration Desk Hours

Potomac Ballroom Foyer

Sunday, December 10	4:30 PM – 6:00 PM
Monday, December 11	7:30 AM – 4:00 PM
Tuesday, December 12	8:00 AM – 3:00 PM
Wednesday, December 13	8:00 AM – 3:00 PM

Committee Meetings and Events

Specialty Group Meetings

Monday, December 11

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

12:10 PM – 12:45 PM

- Dose Response (DRSG)
  Rock Creek Ballroom
- Economics & Benefits Analysis (EBASG)
  River Birch A
- Occupational Health & Safety (OHSSG)
  River Birch B
- Risk, Policy & Law (RPLSG)
  Meeting Room 2
- Security & Defense (SDSG)
  Meeting Room 3
- Foundational Issues in Risk Analysis (FRASG)
  Meeting Room 16
- Justice, Equity and Risk (JERSG)
  Meeting Room 4

12:50 PM – 1:25 PM

- Exposure Assessment (EASG)
  Rock Creek Ballroom
- Risk Communication (RCSG)
  River Birch A
- Applied Risk Management (ARMSG)
  River Birch B
- Decision Analysis and Risk (DARSG)
  Meeting Room 2
- Advanced Materials and Technologies (AMTSG)
  Meeting Room 3
- Engineering & Infrastructure (EISG)
  Meeting Room 5
- Microbial Risk Analysis (MRASG)
  Meeting Room 16
- Resilience Analysis (RASG)
  Meeting Room 4

Specialty Group Mixers

Tuesday, December 12

6:00 PM – 7:30 PM

- Mixer 1: Dose Response, Exposure Assessment, Occupational Health and Safety, Advanced Materials & Technologies
  Meeting Room 15
- Mixer 2: Ecological Risk Assessment, Resilience Analysis, Microbial Risk Analysis and Engineering and Infrastructure
  Meeting Rooms 8/9
- Mixer 3: Decision Analysis and Risk, Foundational Issues in Risk Analysis, Advanced Risk Management, Risk Communication
  Meeting Rooms 10/11
- Mixer 4: Economics and Benefits Analysis, Justice, Equity and Risk, Risk, Policy and Law, Security and Defense
  Ren Club Lounge, 3rd Floor

Networking Lounge	**Childcare**
Meeting Room 7	Meeting Room 1
Monday, December 11	7:30 AM – 5:00 PM
Tuesday, December 12	7:30 AM – 5:00 PM
Wednesday, December 13	7:30 AM – 5:00 PM

Workshops

Sunday, December 10

8:00 AM – 12:00 PM

Workshop 4: Eliciting Judgments from Experts and Non-experts

Aylin Sertkaya, Frank Hearl, and Cristina McLaughlin

Meeting Room 6

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.

8:00 AM – 12:00 PM

Workshop 5: Introduction to Chemical Mixtures Risk Assessment

Linda Teuschler and Richard Hertzberg

Meeting Room 16

This problems-based, half-day, introductory workshop focuses on methods to assess health risks posed by exposures to chemical mixtures in the environment. The workshop will present key concepts and terminology used in chemical mixtures risk assessment. This workshop will discuss component methods that utilize assumptions of response addition and dose addition, including the following dose-additive methods: the hazard index, the interaction-based hazard index, relative potency factors, and toxicity equivalence factors. The integrated additioPlanned format (introductory lectures, methods tutorial with exercises, general discussion)?

Workshops

Sunday, December 10

8:30 AM – 5:30 PM

Workshop 1: Approaches to Assessing Environmental Justice: Perspectives from the Scientific, Regulatory and Regulated Communities

Uni Blake, Anna White, Valerie Washington, Amina Wilkins, Ann Verwiel, Kelsea Best, and Jacqueline Gibson

Meeting Room 3

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.

8:30 AM – 5:30 PM

Workshop 3: Bayesian benchmark dose (BMD) analysis for toxicological and epidemiological data using the BBMD Platform

Kan Shao

Meeting Room 5

This full-day workshop will begin with an introduction on the benchmark dose modeling in a Bayesian framework and then provide participants with hands-on experience of using the Bayesian Benchmark Dose modeling (BBMD) system to perform dose-response assessment using toxicological and epidemiological data. The workshop will cover a number of important topics in Bayesian BMD modeling, including using Markov Chain Monte Carlo (MCMC) algorithm to fit dose-response models, using appropriate statistics to evaluate goodness of fit, estimating the distributions of model parameters and quantities of interest (e.g., BMD), calculating model averaged BMD estimates to take model uncertainty into account, and employing the Monte Carlo simulation for probabilistic low-dose extrapolation, etc. More importantly, the workshop will extensively explore the major functionalities of the BBMD system for dose-response assessment through case studies: (1) for toxicological data, BMD analysis of single and multiple datasets for dichotomous, continuous, and categorical data will be discussed and practiced; (2) for epidemiological data, BMD modeling with quantification for exposure uncertainty will be explored. In short, the workshop will provide participants with both theoretical and practical skills of using the BBMD system for dose-response assessment.

Workshops

Sunday, December 10

1:00 PM – 5:00 PM

Workshop 7: Community Based Resilience Analysis Using the Resilient Node Cluster Analysis Tool (ReNCAT)

Amanda Wachtel and Olga Epshtein Hart

Meeting Room 16

Moving from the theoretical to the practical, workshop attendees will be trained on and use the ReNCAT software to develop a model of the community from the case study. They will run an optimization to understand potential locations for microgrids throughout the community that minimize both cost and the burden on residents to acquire critical services. The workshop will end with a deep dive into results from the model, what they mean, and how to talk through the tradeoffs of different resilient investment options with community stakeholders.

Thursday, December 14

8:00 AM – 12:00 PM

Workshop 10: Cybersecurity Vulnerabilities: The new standards from assessment to prediction

Fabio Massacci, Sasha Romanosky

Meeting Room 16

The world standard for the assessment of cybersecurity software vulnerabilities (CVSS – Common Vulnerabilities Scoring System) is a pillar for security risk assessment for both government and industry. A new version has been proposed this June after 10 years and we are moving forward from assessment to prediction with a recent follow-up (EPSS – Exploit Prediction Scoring System). This tutorial, from the people behind these works, describes to interested policy makers, managers, researchers and graduate students the high level concepts behind the design of assessment, scoring and prediction of cybersecurity vulnerabilities.

Workshops

Thursday, December 14

8:00 AM – 12:00 PM

Workshop 9: Responsible communication on Emerging Technologies: A Risk Governance Tool

Anca Georgiana Rusu

Meeting Room 5

The influence of technology utilization can be moderated through communication, which entails both the method (form) and the content (substance) of the conveyed message. In the context of technology usage, there's a direct correlation between communication and informed decision-making, as the distribution of information regarding the technology (both in form and substance) enables thorough decision-making.

Given that responsible communication serves as a tool for risk governance, this workshop aims to outline the processes and characteristics of such communication. After a few introductory lectures where the communication regarding a few examples of emergign tehcnologies will be made, participants will be divided into stakeholder groups, and following this, common elements will be identified. These elements will subsequently be utilized by risk governance practitioners.

8:30 AM – 5:30 PM

Workshop 8: Dose-response modeling – benchmark dose modeling approaches using online and desktop versions of EPA's Benchmark Dose Software (BMDS) and NIEHS' ToxicR

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

Meeting Room 4

In 2022, EPA released BMDS Online (bmdsonline.epa.gov), a browser-based version of BMDS to allow users to run BMDS on any computer with access to the internet. Recently, EPA has released BMDS Desktop (a Python-based graphic user interface) to replace the Excel-based BMDS 3.3. Additionally, NIEHS has further expanded dose-response capabilities through the release of the R-based ToxicR Bayesian modeling platform 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 demos and hands-on exercises) dose-response modeling of dichotomous, continuous, cancer, and developmental toxicity response data using BMDS Online and BMDS Desktop. 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.

Keynote Sessions

Monday, December 11

8:30 AM – 10:00 AM

How Climate Change Will Affect the Safety and Security of our Food, and Unique Solutions

Rock Creek Ballroom

Maintaining a reliable and safe food supply globally is one of the major challenges associated with climate change, as identified in the most recent Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). We will cover two distinct areas of challenges: (1) how climate change compromises food safety all over the world, and (2) how we can implement solutions using existing supply chains to improve distribution of food and other means to counteract climate change impacts on food security.

Speakers

Michael Ferrari, Climate Alpha
Felicia Wu, Michigan State University

Tuesday, December 12

8:30 AM – 10:00 AM

Risk Management of AI: How Should We Prepare?

Rock Creek Ballroom

Artificial intelligence (AI) is entering every sphere of life, from workplaces to homes to retail to online interactions. There are multiple risks involved with AI; yet at the same time, AI could help policymakers and researchers to manage risks. This plenary panel will focus on both these aspects of risk: the most crucial risks we should understand associated with the widespread use of AI, as well as how AI can be a tool for risk analysts, managers, and communicators in the future.

Speakers

Seth Guikema, University of Michigan
Ann Bostrom, University of Washington
Hayley Falk, University of Michigan
Tony Cox, Cox Associates

Wednesday, December 13

12:00 PM – 1:30 PM

Root Cause Analysis to Reduce and Communicate Risks: Lessons from an Astronaut and Engineer in Healthcare Management – Plenary Lunch

Potomac Ballroom

This plenary luncheon begins with a deep dive into lessons learned as a US astronaut in the 1970s. It then moves to root cause analysis applied to understanding risks in our current health care system, such as those associated with patient safety breaches – and how understanding root causes of surgical and other health care problems can help prevent their occurrence and improve health care across the lifespan.

Speaker

Jim Bagian, University of Michigan

Exhibitors

Center for Truth in Science

300 S. Riverside Plaza, Suite 1625
Chicago, IL 60606
www.truthinscience.org
401-227-0586

The Center for Truth in Science works to promote an environment in which legal and regulatory decisions are made using the best available scientific evidence and methods to interpret and use that information responsibly. Our mission is to ensure science is honestly and objectively portrayed and utilized to make decisions.

DREAM Tech, LLC

642 N. Madison Street
Bloomington, IN 47404
dreamtechllc.com
270-925-2703

DREAM Tech, LLC is a technology-based scientific consulting company specialized in providing customized solutions to support quantitative chemical risk assessment. Our vision is to provide efficient and effective risk assessment services through advanced technology. Company's Bayesian benchmark dose (BBMD®) modeling system is the most comprehensive and scientifically rigorous dose-response modeling platform currently available.

Kennesaw State University

3333 Busbee Drive, MD3306
Kennesaw, GA 30144
www.kennesaw.edu/coles/degrees-programs/graduate/phd-business-administration
470-578-4798

Celebrating 15 years of excellence, the Ph.D. in Business Administration at Kennesaw State University is designed for accomplished professionals looking to advance to leadership positions. Students in the AACSB-accredited, STEM-designated program earn their terminal degree while keeping their full-time jobs. Our newest concentration is Risk & Decision Analytics.

Exhibition
Potomac Ballroom Foyer

Monday, December 11 . . . . . 10:00 AM – 4:00 PM
Poster Session . . . . . 6:00 PM – 8:00 PM
Tuesday, December 12 . . . . . 9:30 AM – 4:00 PM
Wednesday, December 13 . . . . . 9:30 AM – 4:00 PM

Coffee Breaks
Potomac Ballroom Foyer

AM Coffee Breaks . . . . . 10:00 AM – 10:30 AM
PM Coffee Breaks . . . . . 3:00 PM – 3:30 PM

RAND Corporation

1776 Main Street
Santa Monica, CA 90401-3208
www.rand.org
310-393-0411

The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND's research and analysis address issues that impact people everywhere, including security, health, education, sustainability, growth, and development.

Exhibitors

Springer Nature

Van Godewijckstraat 30
Dordrecht, Zuid Holland 3311 GX
The Netherlands
www.springer.com
+31 (0)78 6576000

Springer Nature is a global publisher that serves and supports the research community. Springer Nature aims to advance discovery by publishing robust and insightful science, supporting the development of new areas of research and making ideas and knowledge accessible around the world.

Toxicology Excellence for Risk Assessment (TERA)

1250 Ohio Pike, Suite 197
Cincinnati, Ohio 45102
tera.org
5135427475

Toxicology Excellence for Risk Assessment (TERA) is organized for scientific research, and educational purposes, and has provided sponsors with independent, transparent science since 1995. TERA solves human health risk challenges for diverse government and private sponsors through research and collaboration that emphasizes partnership building across scientific expertise and multiple perspectives. Examples include the World Trade Center disasters, the Elk River spill, the International Toxicity Estimates for Risk (ITER) and the Alliance for Risk Assessment (ARA).

US Enviromental Protection Agency

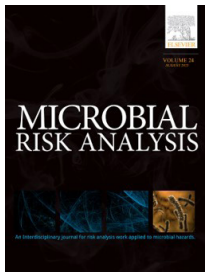
1200 Pennsylvania Avenue NW
Washington, DC 20460
www.epa.gov

The Environmental Protection Agency is built upon a commitment to protect public health and the environment. From tackling the climate crisis to advancing environmental justice, what happens in EPA changes the world.

Thank you to our sponsors

SILVER

BRONZE



ELSEVIER

7:00 AM-8:00 AM **New Member, Student/Young Professional Breakfast**, *Red Bud*

8:30 AM-10:00 AM **Keynote Session** – How Climate Change Will Affect the Safety and Security of our Food, and Unique Solutions, *Rock Creek Ballroom*

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

	Rock Creek Ballroom	River Birch A	River Birch B	Meeting Room 2
10:30 AM – 12:00 PM	M2-A: Environmental Justice and Marginalized Communities	M2-B: Poster Platform: Risk Perception & Communication	M2-C: Artificial Intelligence and Risk Analysis 1	M2-D: Symposium: Infrastructure Resilience at Local and Regional Scales
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), Foundational Issues in Risk Analysis (FRASG), Justice, Equity and Risk (JERSG) 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), Engineering & Infrastructure (EISG), Microbial Risk Analysis (MRASG), Resilience Analysis (RASG)			
1:30 PM-3:00 PM	M3-A: Roundtable: Risk Communication Inequalities and Inequities	M3-B: Poster Platform: Health Risks in Healthcare, Occupational, and Environmental Settings	M3-C: Artificial Intelligence and Risk Analysis 2	M3-D: Water, Infrastructure and Sea-Level Rise

3:00 PM-3:30 AM **Coffee Break**, *Potomac Ballroom Foyer*

3:30 PM – 5:00 PM	M4-A: Roundtable: Federal Activities to Address Needs of Overburdened Communities	M4-B: Roundtable: New Frontiers in Risk Analysis at the Intersection of ESG, Capitals Assessment, Valuation, and Human Health	M4-C: Symposium: Sustainable Food Systems: Risks and Perceptions	M4-D: Infrastructure Resilience

6:00 PM-8:00 PM **Poster Reception**, *Potomac Ballroom*

7:00 AM-8:00 AM **New Member, Student/Young Professional Breakfast**, *Red Bud*

8:30 AM-10:00 AM **Keynote Session** – How Climate Change Will Affect the Safety and Security of our Food, and Unique Solutions, *Rock Creek Ballroom*

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

	Meeting Room 3	Meeting Room 4	Meeting Room 5	Meeting Room 16
10:30 AM – 12:00 PM	M2-E: Roundtable: Risk science and politics: What is and should be the relationship?	M2-F: Symposium: How to build a microbial profile for a Salmonella quantitative microbial risk assessment; data analyses from the front lines	M2-G: Symposium: Applying the Quantitative Microbial Risk Assessment Framework Across Alternative Exposure Scenarios	M2-H: Roundtable: Communicating effectively about attenuated risks: Where are we now and where are we going?
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), Foundational Issues in Risk Analysis (FRASG), Justice, Equity and Risk (JERSG) 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), Engineering & Infrastructure (EISG), Microbial Risk Analysis (MRASG), Resilience Analysis (RASG)			
1:30 PM-3:00 PM	M3-E: Foundations of Risk Analysis 1	M3-F: Roundtable: Interdisciplinary Perspectives on the U.S. Executive Order on Biotechnology	M3-G: Risk Resilience at the Community Level	M3-H: Symposium: Climate Change Countermeasures and Risk

3:00 PM-3:30 AM **Coffee Break**, *Potomac Ballroom Foyer*

3:30 PM – 5:00 PM	M4-E: Roundtable: Resilience at Country Scale: Case of Ukraine	M4-F: Risk Analysis in Agriculture	M4-G: Communicating Science	M4-H: Advancements in Modelling: Dose-Response and Exposure

6:00 PM-8:00 PM **Poster Reception**, *Potomac Ballroom*

8:30 AM-10:00 AM **Keynote Session** – Risk Management of AI: How Should We Prepare? R*ock Creek Ballroom*

	Rock Creek Ballroom	River Birch A	River Birch B	Meeting Room 2
10:30 AM – 12:00 PM	T2-A: Food Safety Policies: Update on Recent Risks and Regulations	T2-B: Symposium: Updating the Social Amplification of Risk Framework for Risk Science and Practice in the 21st century	T2-C: Foodborne Microbial Risks	T2-D: Advances in Natural Hazards Modeling
12:00 PM-1:30 PM	**SRA Business Meeting and Awards Lunch**, *Potomac Ballroom*			
1:30 PM-3:00 PM	T3-A: Roundtable: THE FUTURE OF The Democratic Process and the Clean Energy Transformation in a Post-Truth Society	T3-B: Roundtable: Improving Communication of Risk and Uncertainty Across Federal Agencies	T3-C: International Food Security Risks	T3-D: Risk impacts of tropical cyclones
3:00 PM-3:30 AM	**Coffee Break**, *Potomac Ballroom Foyer*			
3:30 PM-5:00 PM	T4-A: Roundtable: Does risk analysis have a future? A transatlantic perspective	T4-B: Symposium: Watershed Resilience for Low-Capacity Communities	T4-C: Symposium: Food Safety and Security Measures	T4-D: Natural Hazards Infrastructure Resilience
6:00 PM-7:30 PM	**Specialty Group Mixers**, *see page 5*			

8:30 AM-10:00 AM **Keynote Session** – Risk Management of AI: How Should We Prepare? R*ock Creek Ballroom*

	Meeting Room 3	Meeting Room 4	Meeting Room 5	Meeting Room 16
10:30 AM – 12:00 PM	T2-E: Roundtable: Hierarchy of Use: Risk Decision-making and Integrated Thinking	T2-F: Roundtable: Understanding the Potential of Wastewater-Based Epidemiology for Risk Management	T2-G: Security and Disaster Management	T2-H: Symposium: New Approaches to Measure Perceptions and Decision-Making Regarding Risks and Rechnologies: A Methodological Exchange
12:00 PM-1:30 PM	**SRA Business Meeting and Awards Lunch**, *Potomac Ballroom*			
1:30 PM-3:00 PM	T3-E: The Economics of Risk: Theory and Global Applications	T3-F: Roundtable: The Test of Risk Analysis Practice: Quality, Fit for Purpose, or Both?	T3-G: Symposium: Integrated Disaster Risk Management: Joint Session with the International Society for Integrated Disaster Risk Management	T3-H: Lightning Talks: Risk Assessment Potpourri: microbial, dermal, epidemiologic, and metal modelling
3:00 PM-3:30 AM	**Coffee Break**, *Potomac Ballroom Foyer*			
3:30 PM-5:00 PM	T4-E: Risk in Critical Industrial Sectors	T4-F: Roundtable: Integrated Engineering, Public Health, and Data Analytics: A Holistic Approach towards Crisis Mitigation, Response, and Recovery	T4-G: Risk Communication and Perception for Social Systems	T4-H: Symposium: Risk Communication in the Public Sector: Challenges and Successes in Applying Science Across Government
6:00 PM-7:30 PM	**Specialty Group Mixers**, *see page 5*			

	Rock Creek Ballroom	River Birch A	River Birch B	Meeting Room 2	Meeting Room 3
8:30 AM-10:00 AM	W1-A: Symposium: Water Security and Systems Analysis for Infrastructure Development	W1-B: Symposium: Resilience in Transportation Systems	W1-C: Symposium: Innovative Approaches to the Risk Assessment and Risk Management of Emerging Substances	W1-D: Symposium: Computational applications in Sustainability, Resilience, Equity, & Engineering	W1-E: Statistical Models for Engineering and Infrastruture System
10:00 AM-10:30 AM	**Coffee Break**, *Potomac Ballroom Foyer*				
10:30 AM – 12:00 PM	W2-A: Symposium: Cost-Benefit Analysis for Critical Infrastructure Cybersecurity	W2-B: Symposium: Exploring Multi-Faceted Impacts of Climate Change on Energy Infrastructure	W2-C: Renewable energy and climate change mitigation	W2-D: Natural Hazards Perception & Communication	W2-E: Foundations of Risk Analysis 2
12:00 PM – 1:30 PM	**Keynote Session** – Root Cause Analysis to Reduce and Communicate Risks: Lessons from an Astronaut and Engineer in Healthcare Management , *Potomac Ballroom*				
1:30 PM-3:00 PM	W3-A: Roundtable: Space Risk: Planetary Protection against Contamination and Planetary Defense against Asteroids	W3-B: Climate Change and Public Health	W3-C: Adaptive Capacity and Preparedness	W3-D: Environmental Justice, Hazards, and the Built Environment	W3-E: Symposium: Exploring the Role of Psychological Factors in Shaping Judgments and Decisions on Societal Issues
3:00 PM-3:30 AM	**Coffee Break**, *Potomac Ballroom Foyer*				
3:30 PM-5:00 PM	W4-A: Roundtable: Taking [some of] the Wicked out of the Cyber Problem	W4-B: Roundtable: Overview of Proposed SRA Bylaws Changes and Q&A	W4-C: Roundtable: New Developments in Economic Impact Assessments of Risk Reducing Policies	W4-D: Symposium: Wildland Fire – Managing Risk and Impacts	W4-E: Risk Visualization, Perception, and Communication

	Meeting Room 4	Meeting Room 5	Meeting Room 16	Potomac Ballroom Salon I	Potomac Ballroom Salon II	Potomac Ballroom Salon III
8:30 AM-10:00 AM	W1-F: Symposium: School Safety and Security: Models and Practices	W1-G: Symposium: Risk Management and Emerging Biotechnology	W1-H: PFAS and Plastics – Risk Communication and New Technologies	W1-J: Cyber- and Cryptocurrency Risks	W1-K: Lightning Session: Energy, Climate, Uncertainty, and Cyber	W1-L: Wildfire Risks
10:00 AM-10:30 AM	**Coffee Break**, *Potomac Ballroom Foyer*					
10:30 AM – 12:00 PM	W2-F: Symposium: Disaster Risk Reduction and Short- and Long-term Outcomes	W2-G: Emerging Risks – Similarities Across Contexts	W2-H: Symposium: Interventional Probability of Causation with Potential Applications to Formaldehyde Leukemogenicity			
12:00 PM – 1:30 PM	**Keynote Session** – Root Cause Analysis to Reduce and Communicate Risks: Lessons from an Astronaut and Engineer in Healthcare Management , *Potomac Ballroom*					
1:30 PM-3:00 PM	W3-F: Symposium: Bringing Sex Toys Out of the Dark – A Convergent Approach to Identifying and Mitigating Potential Health Risks	W3-G: Antecedents to Trust and Behavior	W3-H: Cyber: Indicators vs Regulators			
3:00 PM-3:30 AM	**Coffee Break**, *Potomac Ballroom Foyer*					
3:30 PM-5:00 PM	W4-F: Symposium: Safety assessment of cultured meat and seafood products	W4-G: Hurricane Research – A Dynamic Risk Science	W4-H: Roundtable: DARPA Resilient Supply-and-Demand Networks Program	W4-J: Roundtable: Prospects from the MENA region, why we need an SRA Chapter & what it may bring	W4-K: Symposium: Methods for Evaluating the Efficacy of Risk Management Strategies in Incident Response and Disaster Mitigation Scenarios	W4-L: Risk, Governance, and Accidents

Technical Program

10:30 AM – 12:00 PM

M2-A: Environmental Justice and Marginalized Communities

Rock Creek Ballroom

Chair: Andrew Hardwick

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

Ghosts in the built microbiome: the negative influence of racism and sexism on accurate built microbiome engineering and policy making

Andrew Hardwick, Joe Graves, Jennifer Kuzma, Christopher Cummings, Joe Brown

North Carolina State University, North Carolina Agricultural and Technical State University, USACE, The University of North Carolina at Chapel Hill

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

Potential human health risks associated with the use of cosmetics and personal care products in minority populations.

Abdel-Razak Kadry, Babasaheb Sonawane

Univeristy of Maryland, Georgetown University, TRACS, LLC

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

Fact check your health: Improving health research literacy among females using a podcast-based intervention

Katie Byrd, Sydney Miller

University of Southern California

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

Housing affordability and disproportionate flood risk exposure of economically insecure residents in Canada

Liton Chakraborty, Jason Thistlethwaite, Daniel Henstra

University of Waterloo

10:30 AM – 12:00 PM

M2-B: Poster Platform: Risk Perception & Communication

River Birch A

Chair: Amanda Boyd

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

Trauma-informed risk communication and community engagement

Amelia Hertzberg

ORISE EPA

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

Social-psychological factors influencing risk perceptions of chronic wasting disease on social media

Alisius Leong, Bruce Lauber, William Siemer, Jeremy Hurst, Richard Stedman, Krysten Schuler, Katherine McComas

Cornell University, New York State Department of Environmental Conservation

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

Understanding and Tolerance in Communication about COVID-19 in Japan

Maho Ishibashi, Naoya Sekiya

The University of Tokyo

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

Numeracy and Stated Preference Valuation

Michael Eber

Harvard University

10:50 am **M2-B.5**

An analysis of public's risk perception toward the offshore release of ALPS treated water at TEPCO's Fukushima Daiichi Power Station and its causes

Midori Aoyagi, Ikuma Ogura

National Institute for Environmental Studies, Ibaraki University

10:55 am **M2-B.6**

Misinformation and Digital Health Literacy Among American Indian and Alaska Native People

Amanda Boyd, YingChia Hsu, Erin Morgan, Magdalena Haakenstad, Juliana Garcia, Lucas Gillespie, Denise Dillard

Washington State University

11:00 am **M2-B.7**

Self-affirmation as a tool to encourage recycle and reuse behaviors

Prerna Shah, Janet Yang

SUNY-Buffalo, University at Buffalo

11:05 am **M2-B.8**

Behavior change preferences of Canadian hunters' based on perceived risk of tuberculosis and brucellosis from wood bison.

David Hall, Kyle Plotsky

University of Calgary

11:10 am **M2-B.9**

Enhancing FDA's communication on foodborne illness outbreaks and food recalls through consumer research: An overview of a research program

Fanfan Wu, Amy Lando, Linda Verrill, Lindsay Walerstein

U.S. Food and Drug Administration (FDA)

11:15 am **M2-B.10**

The Role of Political Identity Matching in Predicting Climate Change Attitudes and Risk Perceptions

Raphaela Martins Velho, Janet Yang

University at Buffalo

10:30 AM – 12:00 PM

M2-C: Artificial Intelligence and Risk Analysis 1

River Birch B

Chair: Seth Guikema

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

Perception and enjoyment of AI-generated narratives in the age of artificial intelligence

Haoran Chu, Sixiao Liu

University of Florida, University of Pennsylvania

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

Tracking risks of AI in healthcare applications: a multi-layer risk register approach

Negin Moghadasi, Rupa S. Valdez, Misagh Piran, Negar Moghaddasi, Thomas L. Polmateer, Davis Loose, James H. Lambert

University of Virginia, Western University of Health Sciences

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

Machine learning to predict total and pathogenic Vibrio parahaemolyticus concentrations in seawater and oysters

Shuyi Feng, Shraddha Karanth, Esam Almuhaideb, Salina Parveen, Abani Pradhan

University of Maryland College Park, University of Maryland Eastern Shore

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

Forecaster perceptions of trustworthiness, explainability, and interpretability in the context of AI-derived guidance

Mariana Cains, Christopher Wirz, Julie Demuth, Ann Bostrom

National Center for Atmospheric Research, NCAR, University of Washington

Technical Program

10:30 AM – 12:00 PM

M2-D: Symposium: Infrastructure Resilience at Local and Regional Scales

Meeting Room 2

Chair: Andrew Pfluger

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

Increasing Infrastructure Resilience through Optimization Scalability Heuristic

Kelsey Stoddard

US Army Corps of Engineers – ERDC

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

Infrastructure Resilience to Mold for Military Installations

Margaret Kurth, Matthew Joyner

USACE ERDC

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

Resilience of wastewater treatment facilities to individual and compound stressors

Andrew Pfluger

USMA

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

A Geospatial MCDA Tool for Distributed Emergency Response Resources

Andrew Jin, Leonardo Bautista, Igor Linkov, Kelly Sanders

University of Southern California, Engineer Research and Development Center, U.S. Army Corps of Engineers

10:30 AM – 12:00 PM

M2-E: Roundtable: Risk science and politics: What is and should be the relationship?

Meeting Room 3

Chair: Terje Aven

Risk science can be seen as the most updated and justified knowledge – in the form of concepts, principles, approaches, methods and models – for understanding, assessing, characterizing, communicating and handling risk, with applications. It is also about the practice that gives us this knowledge. It is commonly stated that it should be a goal for risk science to be politically neutral. This panel will discuss the meaning and appropriateness of this goal. In particular, the panel will debate the position of the Society for Risk Analysis (SRA) on this matter.

Recently, an SRA policy has been formulated on promoting risk science in decision-making (SRA 2022). The policy states that SRA's charge is to promote the role of risk science in decision-making and be actively engaged in translating risk science to policy and other decision makers. It highlights that SRA should not make policy recommendations or recommend specific solutions to societal problems. It is, however, mentioned that, in rare cases, SRA may endorse a specific policy or solution. The cases are defined in the following way:

Such endorsement would be appropriate only when the complex participatory process of engaging the full range of experts, stakeholders, and citizens for consensus building has taken place and a specific solution is supported by analysis that is consistent with the best practices of risk analysis. In such cases, care should be taken to provide a platform for dialogue that incorporates a diverse range of views to minimize potential biases (SRA 2022)

As all professional societies, SRA builds it existence and activities on certain values and policies. Historically, SRA has been clear on being politically neutral in the sense of not making policy recommendations or recommending specific solutions to societal problems. It can be discussed if the SRA (2022) statement is in line with this historical SRA perspective.

Panelists

- Felicia Wu
- Marja Ylönen
- Seth Guikema
- Robyn Wilson

10:30 AM – 12:00 PM

M2-F: Symposium: How to build a microbial profile for a Salmonella quantitative microbial risk assessment; data analyses from the front lines

Meeting Room 4

Chair: Joanna Zablotsky Kufel

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

Overview of the Food Safety and Inspection Service's Salmonella in Poultry Initiative and Risk Assessments.

Joanna Zablotsky Kufel

USDA FSIS

10:45 am **M2-F.2**

Deep dive on the data: Analysis of FSIS serotype data

Drew Posny

United States Department of Agriculture, Food Safey and Inspection Service

11:00 am **M2-F.3**

Concentration and Prevalence: Duality or Tautology

*Michael Williams, Iva Bilanovic**

United States Department of Agriculture, Food Safety and Inspection Service

11:15 am **M2-F.4**

Beyond 100 Grams: What The NHANES Data Can Tell Us About Poultry Consumption

*Davia LaBarre, Drew Posny**

United States Department of Agriculture, Food Safety and Inspection Service

11:30 am **M2-F.5**

Why Metadata Matters: Lessons For Public-Private Data Partnerships

Iva Bilanovic

United States Department of Agriculture, Food Safety and Inspection Service

10:30 AM – 12:00 PM

M2-G: Symposium: Applying the Quantitative Microbial Risk Assessment Framework Across Alternative Exposure Scenarios

Meeting Room 5

Chair: Ainsley Otten

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

How DNA Extraction Techniques Affect QMRA Results in Occupational, Recreational, and Drinking Water Exposures of Cryptosporidium

*Alexis Mraz, Kayla Shorter**

The College of New Jersey

10:45 am **M2-G.2**

Applying QMRA to Inform Mpox Risk Management

Jade Mitchell

Michigan State University

11:00 am **M2-G.3**

Exposures to Legionella and Mycobacterium Avium Complex (MAC) from Indoor Water Uses

Ryan Julien

Michigan State University

11:15 am **M2-G.4**

Decision Support for Economic Valuation of Food Safety Risk Reduction

Carly Gomez

Michigan State University

11:30 am **M2-G.5**

Case Study and Review of Risk Factors for Aerosol Exposure to Coccidioides Spp.

David Kahn

Drexel University

10:30 AM – 12:00 PM

M2-H: Roundtable: Communicating effectively about attenuated risks: Where are we now and where are we going?

Meeting Room 16

Chair: Dominic Balog-Way

This roundtable brings together a multidisciplinary panel of experts to discuss their latest thinking and research on so-called attenuated risk issues. In contrast with amplified risks, attenuated risks refer to those risks which experts judge to be serious, but receive disproportionately little concern, sociopolitical activity, and/or attention from society. While oft-cited examples include naturally occurring radon, automobile accidents, and tobacco smoking, panelists will discuss contemporary contexts relating to electronic cigarettes, lead ammunition poisoning, dioxin, alcohol use, opioids use pre-2010, and aquaculture facility siting. This will lay the foundations for a broader discussion addressing the current state and future directions of research and practice on attenuated risk issues. The central purpose of the roundtable is to stimulate a lively debate on a class of risk issues that are all too often overlooked. Along with opening-up the discussion to audience contributions, panelists will be asked to consider at least three key questions. What do we really mean when we classify something as an attenuated versus amplified risk issue? What are the mechanisms, processes, and effects of risk attenuation in the context of the social amplification of risk framework? To what extent and how should risk communicators vary their approaches when communicating about attenuated risk issues?

Panelists

- Katherine McComas
- Robin Cantor
- Laura Rickard
- Jeff Niederdeppe
- Adam Zwickle
- Nick Pidgeon

1:30 PM – 3:00 PM

M3-A: Roundtable: Risk Communication Inequalities and Inequities

Rock Creek Ballroom

Chair: Cindy Jardine

Risk communication inequalities (defined as the differences in how individuals or groups access, engage with, process and act upon risk information) are a major driver in promoting and/or perpetuating disparities and inequities in the assumed burden of health and environmental risks. Such inequalities particularly impact structurally-disadvantaged individuals and populations. Our 'traditional' risk communication theories and methods have focussed primarily on either individual-level approaches or generic population-level approaches, neither of which fully account for the cultural, political and social spaces in which risk communication inequalities may exist. Moreover, inadequate or inappropriate risk communication may create and/or perpetuate socially constructed harms and traumas, such as racism. At-risk and structurally-disadvantaged populations are often 'spoken to' rather than 'talked with', resulting in ineffective interactions, less empathy and acknowledgement of concerns, and ultimately worse outcomes.

Addressing risk communication inequalities and inequities requires broadening our scope and fundamental understanding of how communication at multiple levels contributes to or mitigates risk and health disparities. Participatory and/or partnership processes that involve specific communities or populations when developing strategic risk communication efforts have been promoted as an approach that improves the equity of communication interventions, research and policy. More recently, 'trauma-informed' or 'trauma-aware' risk communication approaches have been advocated as a means of specifically engaging in more equitable and effective communications with populations that have experienced traumas such as systemic racism, transgenerational harms and climate change. The key principles of a trauma-informed approach are: 1) safety; 2) trustworthiness and transparency; 3) peer support; 4) collaboration and mutuality; 5) empowerment, voice and choice; and 6) cultural, historical and gender issues (SAMSHA 2014)

Panelists

- S. Michelle Driedger
- Rui Gaspar
- Amelia Hertzberg
- Amanda Boyd
- Jeff Niederdeppe

1:30 PM – 3:00 PM

M3-B: Poster Platform: Health Risks in Healthcare, Occupational, and Environmental Settings

River Birch A

Chair: Patrick Gurian

1:30 pm **M3-B.1**

Health risk assessment of air pollution and alcohol consumption on the mortality of liver disease and cirrhosis

Chia Fen Chen, Wan-Ting Hsu, Szu Pei Chien, She Yu Chiu, Chi Chang Ho, Hwa Lung Yu, Wen-Chao Ho

China Medical University, National Health Research Institutes, National Taiwan university

1:35 pm **M3-B.2**

Health risk assessment of air pollution and diet on the mortality of vascular dementia

Wan-Ting Hsu, Chia Fen Chen, Szu Pei Chien, Hwa Lung Yu, Chi Chang Ho, She Yu Chiu, Wen-Chao Ho

China Medical University, National Taiwan university, National Health Research Institutes

1:40 pm **M3-B.3**

Catheter-associated urinary tract infections: a quantitative microbial risk assessment

Madeline Lewis, Mark Weir

Ohio State University

1:45 pm **M3-B4**

Examining media framing of pesticide residue issues: implications for food safety and beyond

Yu-Chan Chiu

National Taiwan University

1:50 pm **M3-B.5**

Computational model development and evaluation of infectious disease risk estimates in healthcare contexts

Madeline Lewis, Mark Weir

Ohio State University

1:55 pm **M3-B.6**

Making Sense of Indicator Bacteria: Health Risks of Recreational Contact with Water Bodies of Brazil's Guanabara Bay Basin

Rachel Sklar, Alexander Chabrelie, Renato Carreira, Patrick Gurian, Jade Mitchell*

UCSF, Michigan State University, Pontifical Catholic University of Rio de Janeiro, Drexel University

2:00 pm **M3-B.7**

Human health risk of cohabitating with livestock

David Demaree, Tyler Stump, Hanna Brosky, Gouthami Rao, Aijia Zhou, Marc Verhougstraete, Joseph Eisenber

ORISE at US EPA, Michigan State University, QRMA VI, University of North Carolina, University of Illinois, University of Arizona, University of Michigan

2:05 pm **M3-B.8**

An attempt to quantify effect on low-dose lead exposure in Japanese adults

Kyoko Ono

RISS, AIST

2:10 pm **M3-B.9**

Implementation of Risk Management and Brownfield Reuse on Abandoned Mining Sites with Soil Contamination

Hsin-Yu Chang, Jui-Hsiang Liu, Tzu-Hsin Wang, Bo-Wei Power Liang, Wen-Jie Chen, Yihsin Lai

Environmental Protection Administration Executive Yuan, R.O.C. (Taiwan), Sinotech Engineering Services, LTD

1:30 PM – 3:00 PM

M3-C: Artificial Intelligence and Risk Analysis 2

River Birch B

Chair: Christopher Wirz

1:30 pm **M3-C.1**
The use of artificial intelligence in the instrumentalization of disaster classifiers
Samir Batista Fernandes, Marcelo Luciano Vieira, Rodrigo Werner da Silva, Wagner Dos Anjos Carvalho
Instituto Científico e Tecnológico em Defesa Civil, Faculdade Presbiteriana Mackenzie Rio

1:45 pm **M3-C.2**
Quantum chemistry and machine learning to predict environmental fate of polymers
Kevin Hickey, Jeremy Feinstein, Cheng Wang, Margaret MacDonell
Argonne National Laboratory

2:00 pm **M3-C.3**
A foggy forecast: Expert perceptions of new AI guidance for operational decision making
Christopher Wirz, Julie Demuth, Miranda White, Mariana Cains, Philippe Tissot, Jacob Radford, Hamid Kamangir, Evan Krell, Ann Bostrom, Scott King, John Williams
National Center for Atmospheric Research, Texas A&M University, Cooperative Institute for Research in the Atmosphere, University of Washington, The Weather Company, National Weather Service

2:15 pm **M3-C.4**
Resilience Stress Testing Using a Digital Twin at Dallas Fort-Worth Airport (DFW)
Robert Horton, Gregory Kiker, Ben Trump, Evangelina Agapaki, Igor Linkov
Dallas Fort Worth International Airport, University of Florida

2:30 pm **M3-C.5**
Open-source data pipeline for street-view images: a case study on community mobility during COVID-19 pandemic
Matthew Martell, Nick Terry, Ribhu Sengupta, Christopher Salazar, Nicole Errett, Scott Miles, Youngjun Choe, Joseph Wartman*
University of Washington

1:30 PM – 3:00 PM

M3-D: Water, Infrastructure and Sea-Level Rise

Meeting Room 2

Chair: Gina Tonn

1:30 pm **M3-D.1**
Functional Isolation: The compounding burden amidst cascading infrastructure network failures and disrupted supply chains
Mitchell Anderson, Tom Logan, Logan Brunner
University of Canterbury

1:50 pm **M3-D.2**
Engineering analysis for climate resilience of highway bridges
Gina Tonn
Verdantas

2:10 pm **M3-D.3**
Analyzing the impact of sea level rise and increased flooding on coastal septic system failure
Emily Speierman, Allison Reilly
University of Maryland, College Park

2:30 pm **M3-D.4**
How do Hurricanes and Federal Aid Affect Eviction Risk? Decade-long Evidence from the United States
Qian He, Kelsea Best, Allison Reilly, Deb Niemeier
Rowan University, University of Maryland

1:30 PM – 3:00 PM

M3-E: Foundations of Risk Analysis 1

Meeting Room 3

Chair: Maksim Kitsak

1:30 pm **M3-E.1**
Strategic risk analysis
Elisabeth Pate-Cornell, Marc Eskew
Stanford

1:50 pm **M3-E.2**
On the use of the term "real risk"
Roger Flage, Terje Aven, Ingrid Glette-Iversen
University of Stavanger

2:10 pm **M3-E.3**
Uncertainty in relation to risk: How can the risk field and policymakers' views be aligned?
Sanja Mrksic Kovacevic, Frederic Bouder
University of Stavanger

2:30 pm **M3-E.4**
Are Civilizations Destined to Collapse? Lessons from the Mediterranean Bronze Age
Maksim Kitsak, Igor Linkov, Benjamin Trump, Elizaveta Pinigina, Stephanie Galaitsi, Krista Rand, Eric H. Cline
Delft University of Technology, US Army Engineer Research and Development Center, US Army Corps of Engineers, Capitol Archaeological Institute, The George Washington University

1:30 PM – 3:00 PM

M3-F: Roundtable: Interdisciplinary Perspectives on the U.S. Executive Order on Biotechnology

Meeting Room 4

Chair: Khara Grieger

Innovative biotechnologies applied across sectors present enormous potential to help address societal goals and to design and achieve more sustainable and resilient societies. Biotechnology broadly refers to innovations in the life sciences, including application of genetic engineering and genome editing to insert or modify specific gene sequences in living organisms, and the use of biological systems to develop products. Recent innovations in genome editing show particular promise in improving food and nutrition security, enabling sustainable agricultural practices, and supporting resilient supply chains, among other benefits in the bioeconomy. Some benefits have already been proven in human health applications, including in the development of vaccines. To realize the potential of biotechnology safely and sustainably, processes are needed to identify and mitigate potential risks and unintended impacts.

The Biden Administration issued an Executive Order (EO) on "Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure American Bioeconomy" on September 12, 2022 that included sections on Biotechnology Regulation Clarity and Efficiency (Section 8) and Reducing Risk by Advancing Biosafety and Biosecurity (Section 9). Combined, these parts of the EO task the federal government with developing an enabling environment for innovation while ensuring appropriate risk mitigation throughout research, development, and commercialization. In addition, the EO requires development of strategies to grow the U.S. bioeconomy, including setting research priorities, data for the bioeconomy, workforce development, and international engagement, as well as actions to protect national security. The EO also opens a window for policy discussion between stakeholders and regulatory agencies regarding oversight of biotechnologies and resulting products.

Panelists

- Christopher Cummings
- Zachary Brown
- Nick Loschin
- Ilaria Cimadori

1:30 PM – 3:00 PM

M3-G: Risk Resilience at the Community Level

Meeting Room 5

Chair: Laura Rickard

1:30 pm **M3-G.1**

Using Twitter to evaluate wildfire smoke risk communications in Oregon and Washington

Catherine Slavik, Alex Segrè Cohen, Daniel Chapman, Nahla Bendefaa, Ellen Peters

University of Oregon

1:45 pm **M3-G.2**

Trust, sense of place, risk perception and their effects on cooperation with recirculating aquaculture system developments

Nathan Smith, Laura Rickard, Branden Johnson

University of Maine, Decision Research

2:00 pm **M3-G.3**

Government's Disaster Recovery Efforts and Disaster Reconstruction: Human-Centered Approach following 2015 Nepal Earthquake Recovery Process

Jungwon Yeo

University of Central Florida

2:15 pm **M3-G.4**

Prioritization of Hazard Mitigation Projects in the State of Illinois

Mia Renna

University of Maryland College Park

1:30 PM – 3:00 PM

M3-H: Symposium: Climate Change Countermeasures and Risk

Meeting Room 16

Chair: Yasunobu Maeda

1:30 pm **M3-H.1**

Climate change and plastic ban

Yasunobu Maeda, Pooja Pragati Suresh

Shizuoka University, Boeing Commercial Airplanes

1:45 pm **M3-H.2**

Challenges of groundwater management and its associated risks in Taiwan under climate change

Shih-Yao Lee, Tailin Huang, Hwa Lung Yu

National Taiwan University, National Cheng Kung University

2:00 pm **M3-H.3**

Risk and public perception of hydrogen utilization technology as a climate change countermeasure: a case study of hydrogen refueling stations in Japan

Kyoko Ono

RISS, AIST

2:15 pm **M3-H.4**

Consideration on land use optimization for coexistence of disaster prevention, climate change and biodiversity

Satoru Yusa, Yuichiro Usuda

National Research Institute for Earth Science and Disaster Resilience

2:30 pm **M3-H.5**

Exploring public risk perceptions of climate change and carbon dioxide removal in Malaysia

Elspeth Spence, Nick Pidgeon, Melissa Payne, Emily Cox

Cardiff University, South East Asia Rainforest Research Partnership

3:30 PM – 5:00 PM

M4-A: Roundtable: Federal Activities to Address Needs of Overburdened Communities

Rock Creek Ballroom

Chair: Chris Frey

The U.S. Federal Government is engaged in a whole-of-government approach to address the needs of overburdened and underserved communities in response to Executive Orders 13985, 14008, 14091, and 14096. This roundtable will provide an overview of what several Federal agencies are doing to address the needs of over-burdened communities in a variety of decision contexts. These decision contexts include, but are not limited to, promoting community health, wellbeing, and quality of life, improving climate readiness and resilience to changing climate, identifying interventions related to aging infrastructure, and ensuring decision processes that promote participatory justice by supporting community-engaged activities. In addition to intramural and extramural research activities to expand and develop the science to inform decisions to improve outcomes for overburdened communities, Federal agencies are developing and implementing policies and programs to deliver resources and solutions to such communities.

Panelists

- Igor Linkov
- Gretchen Goldman

3:30 PM – 5:00 PM

M4-B: Roundtable: New Frontiers in Risk Analysis at the Intersection of ESG, Capitals Assessment, Valuation, and Human Health

River Birch A

Chair: Fred Boelter

This session explores the turbulent ESG, capitals, and valuation space in terms of risk analysis and risk management contexts, and how the perceptions, views, etc. of stakeholders come together in decision making in managing risk. The speakers bring occupational health and safety expertise in science, regulatory development, executive management, and consensus standards development to this inquiry; and, posit that there is an imperative to apply Risk Analysis: Fundamental Principles (SRA, 2018) to these topics.

An overview of ESG and capitals-thinking frameworks sets the stage for addressing how stakeholders and shareholders are navigating these spaces, how they are assessing risk, and how integrated decision-making is being done around business, operating decisions, and the ability to attract capital investment. Speakers will engage in discussions on ESG frameworks (e.g. GRI, SASB, ISSB), integrated capitals assessment (e.g. Capitals Coalition), conformity assessment (e.g. rating agencies and regulators), and valuation methods.

ESG's originating focus is fiduciary (e.g. finance, investment) and for many the hard currency is carbon. Many others view ESG as creating an opportunity to improve global and human health, including worker and environmental health.

Is it not a fallacy to be forced to choose between creating wealth and jobs or creating healthier workplaces and a healthier world? U.S. Senator from Illinois Paul Douglas (b.1892-d.1976) saw such fallacies as a false-choice and pressed for answers on how to obtain both. From this centering perspective, a premise put forth in this session is to follow the money while putting human health at the center of ESG-related analysis and decision-making.

Panelists

- Frank Hearl
- Chia-Chia Chang
- Silvia Maberti
- Paul Harper
- Fred Boelter

3:30 PM – 5:00 PM

M4-C: Symposium: Sustainable Food Systems: Risks and Perceptions

River Birch B

Chair: Adam Zwickle

3:30 pm **M4-C.1**
Leveraging a Systems Approach to Environmental Health
Adam Zwickle, Latifa Salangi, Rachel Szczytko, Joe Hamm
Michigan State University

3:50 pm **M4-C.2**
Incorporating Superorganisms in OneHealth Approaches
Margaret Coleman, D. Warner North
Coleman Scientific Consulting, Northworks

4:10 pm **M4-C.3**
Don't say "vegan" or "plant-based": Food without meat and dairy is more likely to be chosen when labeled as "healthy" and "sustainable"
Patrycja Sleboda, Wandi Bruine de Bruin, Tania Gutsche, Joe Árvai
University of Southern California

4:30 pm **M4-C.4**
Oilfield produced water for crop irrigation: Is it a sustainable and safe solution?
Jennifer Hoponick Redmon, Donna Womack, Ted Lillys, Avner Vengosh, AJ Kondash
RTI International, Duke University

3:30 PM – 5:00 PM

M4-D: Infrastructure Resilience

Meeting Room 2

Chair: Logan Brunner

3:30 pm **M4-D.1**
Sensitivity analysis on the vulnerability of interdependent infrastructure
Logan Brunner, Tom Logan
University of Canterbury

3:45 pm **M4-D.2**
Critical Interdependencies Assessment for Resilience of Facilities
Rachid Ouache, David Bristow
UVIC, University of Victoria

4:00 pm **M4-D.3**
Serious gaming for teaching complex human-technical systems experiencing shocks: An application to interdependent infrastructure recovery
Mohammad Reza Yazdi-Samadi, Allison Reilly, Matthew Gabb, Micheal Gerst, Melissa Kenney
University of Maryland, City of Edina's Sustainability Division, University of Minnesota

4:15 pm **M4-D.4**
The resilience curve is a poor model of resilience
Daniel Eisenberg, Thomas Seager, David Alderson
Naval Postgraduate School, Arizona State University

4:30 pm **M4-D.5**
Prediction Markets for Critical Infrastructure Risk Assessment
Benjamin Bonin, Cyrus Bonyadi, Nathan Clough, Elizabeth McCarthy, Megan Nyre-Yu, Nick Winstead*
Sandia National Laboratories, Zeichner Risk Analytics

3:30 PM – 5:00 PM

M4-E: Roundtable: Resilience at Country Scale: Case of Ukraine

Meeting Room 3

Chair: Igor Linkov

3:30 pm **M4-E.1**
Digital Transformation at the time of war
Yegor Dubinskiy
Ministry of Digital Transformation, Ukraine

3:50 pm **M4-E.2**
USA/Ukraine Cybersecurity Collaboration
Brandon Wales
DHS/CISA

4:10 pm **M4-E.3**
Impact of Ukraine/Russia Conflict on Global Food Security
Olga Shashkina
Independent Consultant

4:30 pm **M4-E.4**
bridgeUkraine Initiative (www.bridgeUkraine.org)
Stergios-Aristoteles Mitoulis
University of Birmingham

3:30 PM – 5:00 PM

M4-F: Risk Analysis in Agriculture

Meeting Room 4

Chair: Gregory Kiker

3:30 pm **M4-F.1**
Exploring weather information seeking and processing among Illinois Farmers
Shupei Yuan
Northern Illinois University

3:45 pm **M4-F.2**
The key factors for engaging small farmers in effective risk management
Xuanli Liu
Fort Valley State University

4:00 pm **M4-F.3**
A data-driven approach to assess the impact of climate change on the agriculture sector in Jordan
Yingqiang Xu
Vanderbilt University

4:15 pm **M4-F.4**
Assessing Climate Change Effects on Global Rangeland Dynamics and Livestock Productivity
Gregory Kiker, Savannah Morgan, Eric Pitts, Kate Vaiknoras, Jayson Beckman, Randall Boone, Ephraim Nkonya
University of Florida, United States Department of Agriculture Economic Research Service, Colorado State University

4:30 pm **M4-F.5**
Preventing Chagas disease through promoting hygienic processing of acai berries: A case study of a successful risk communication program for two communities in the Brazilian Amazon
Ben Rholdan Pereira, Bret Shaw, Dominique Brossard, Walter Lima Junior
Rutgers University, University of Wisconsin – Madison, Universidade Federal do Para

3:30 PM – 5:00 PM

M4-G: Communicating Science

Meeting Room 5

Chair: John Besley

3:30 pm **M4-G.1**

Credible communications: scientific integrity, transparency and knowledge mobilization

Steven Gibb

IAFNS

3:50 pm **M4-G.2**

Environmental Scientists Have Limited Experience Receiving Communication Support

John Besley

Michigan State University

4:10 pm **M4-G.3**

Uncertainty and HIV-cure science: a message experiment

Sebastiaan Gorissen, Yi Liao, Jakob Jensen, Joshua Barbour, Kevin John, Dallin Adams, Chelsea Ratcliff*

Minot State University, University of Utah, University of Texas at Austin, Brigham Young University, The University of Georgia

4:30 pm **M4-G.4**

Communicating Emerging Energy Research to the Public: A Message Experiment Examining Uncertainty, Source, and Bandwagon Cues

Kevin John, Jakob Jensen, Yi Liao, Sebastiaan Gorissen, Camilla Owens, Dallin Adams, Manu Pokharel, Chelsea Ratcliff

Brigham Young University, University of Utah, Minot State University, Texas State University, The University of Georgia

3:30 PM – 5:00 PM

M4-H: Advancements in Modelling: Dose-Response and Exposure

Meeting Room 16

Chair: Tony Cox

3:30 pm **M4-H.1**

What is an exposure-response curve?

Tony Cox

Cox Associates

3:50 pm **M4-H.2**

Utilization of life expectancy losses as a risk assessment metric: the case of crystalline silica

Andrey Korchevskiy

Chemistry & Industrial Hygiene, Inc.

4:10 pm **M4-H.3**

Increasing scientific confidence in exposure models to accelerate the pace of their application for chemical assessments

Richard Becker, Elke Jensen, Paul Deleo, Rosemary Zaleski, Jon Arnot

American Chemistry Council, Dow, Lumina Consulting, L.L.C., ARC Arnot Research & Consulting

6:00 PM – 8:00 PM

Poster Session

Potomac Ballroom

P.1

Nomophobia among university students in five Arab countries in the Middle East: prevalence and risk factors

Abdallah Naser, Hassan Alwafi, Mohamed Bahlol, Amer Abukhalaf, Sami Qadus

Isra University, Umm Al-Qura University, Egyptian Russian University, University of Florida

P.2

Global prevalence of monkeypox from May to July 2022

Abdallah Naser

Isra University

P.3

Gender difference of risk perception on environmental risk factors including electromagnetic fields (EMFs)

Chiyoji Ohkubo

Japan Electrical Safety & Environment Technology Laboratories

P.4

Tracking the Spread of Disinformation on Social Media Using Big Data Analytics

Nika Mahdavi, Eva Murdock, Puneet Agarwal, Ethan Eichten, Jack Reed, Vanessa Veto

Cal Poly San Luis Obispo, California Polytechnic State University

P.5

Efforts to Protect Outdoor Workers from Wildfire Smoke and the Potential Implications for Other Similar Occupational Exposures

Douglas Johns, Kathleen Navarro

CDC/NIOSH, Department of the Interior

P.6

Fair innings: an empirical test

James Hammitt

Harvard University

P.7

Measuring Resilience Across Multiple Dimensions: Strategies for Expert Elicitation

Victoria Kraemer, Casey Canfield

Missouri University of Science and Technology

P.8

Occupational health risk assessment for Indium phosphide and Indium compounds

Pei-Yi Chen, Kuen-Yuh Wu

National Taiwan University

P.9

Whose opinions should be heard? Comparison of newspaper coverage of children's health check-ups

Midori Aoyagi

National Institute for Environmental Studies

P.10

March 2023 Arkansas Tornadoes: social media use by public organizations

Rejina Manandhar

Arkansas Tech University

P.11

Linking risk and sustainability through rational decision-making

Sandra Seno Alday, Anca Hanea

The University of Sydney Business School, The University of Melbourne

P.12

Effects of social determinants of health on perception of environmental health risk

Rachel Szczytko, Adam Zwickle, Joe Hamm, Latifa Salangi

Michigan State University

P.13

How narrative and framing in risk communication change public risk responsive behavior: evidence from a survey experiment

Chuanshen Qin, Zhuling Liu

Shanghai Jiao Tong University

P.14

Work remotely or work from the office? Efficiency versus resilience in collaborating teams

Maksim Kitsak, Igor Linkov, Benjamin Trump

Delft University of Technology, US Army Engineer Research and Development Center, US Army Corps of Engineers

P.15

Examining psychological distance and construal level effects on people's disease barrier perception about online health consultation

Shuo Yao, Haoran Chu

University of Florida

P.16

Machine learning-based prediction of Salmonella genetic patterns associated with different stages of chicken production

Shraddha Karanth, Abani Pradhan

University of Maryland, College Park

P.17

Using bayesian statistical methods to interpret clinical trial data for gossypol dose-response assessments

EnYu Chen, Su-Yin Chiang, Kuen-Yuh Wu

National Taiwan University, China Medical University

P.18

Advancing health equity by addressing dioxin risks

Latifa Salangi, Adam Zwickle, Rachel Szczytko, Joe Hamm

Michigan State University

P.19

Application of quantitative microbial risk assessment to respiratory pathogens and implications for uptake in policy

Lizhan Tang, Timothy Julian, Kerry Hamilton

Swiss Federal Institute of Aquatic Science and Technology, Arizon State University

P.20

Impacts of Psychoactive Drugs on the Survival and Locomotion of C. virginica Oyster Larvae

Gustavo Salcedo, Sheree Pagsuyoin

University of Massachusetts, UMass Lowell

P.21

Public pathways to net zero: mapping the landscape of attitudes towards decarbonised heating technologies among the UK public

William Smith, Christina Demski, Nick Pidgeon

Cardiff University, University of Bath

P.22

Our Shot to Improve Vaccine Uptake: Evaluating Gain-Loss Framing in the Bivalent COVID-19 Vaccine Context

Kyle Chambers, Haoran Chu

University of Florida

P.23

Proposal to develop assessment framework for extractables and leachables in pharmaceuticals taking into account skin sensitization risk

Asako Fukushima, Tae Hayashi, Masahiro Takeyoshi, Akihiko Hirose

Chemicals Evaluation and Research Institute, Japan

P.24

Analysis of Factors Affecting Legal Immigration in the United States Using Data and Predictive Analytics

Mahek Karamchandani, Puneet Agarwal, Nika Mahdavi, Boaz Nakhimovsky, Katrina Apiado

Cal Poly San Luis Obispo, California Polytechnic State University

P.25

Optimizing resource allocation in multi-layered defense systems against probabilistic and strategic risks

Zhiyuan Wei, Jun Zhuang

University at Buffalo

6:00 PM – 8:00 PM

Poster Session

Potomac Ballroom

P.26
Managing occupational health risks in an automated workplace design: a pilot study in artificial intelligence
Pei-Yi Chen, Shao-Zu Huang, Kuen-Yuh Wu
National Taiwan University

P.27
It's the intensity, not the average: The risk perception gap between scientists and the public on fine dust pollution
Ho Young Yoon
Ewha Womans University

P.28
Per- and polyfluoroalkyl Substances (PFAS) in community water systems in Minnesota
Christopher Greene, Jane de Lambert
Minnesota Department of Health

P.29
Prevalence of Escherichia coli O157:H7 and Salmonella serovars in microgreens grown from contaminated seeds
Aishwarya Rao, Abani Pradhan, Jitendra Patel
University of Maryland, USDA

P.30
Gauging misinformation about COVID-19: types, sources, and risks
Nagwan Zahry, Hong Qin, Azad Hossain
The University of Tennessee-Chattanooga

P.31
Estimating the contribution of private well water to PFAS exposure using a probabilistic modeling approach
Banks Grubbs, Jacqueline MacDonald Gibson
North Carolina State University

P.32
From bioreactors to hospitals: incorporating bench scale studies in mechanistic models to reduce legionellosis outbreaks in healthcare facilities
Kayla Shorter, Alexis Mraz, Nikhil Parab
The College of New Jersey

P.33
Understanding Food Insecurity in Los Angeles County During the COVID-19 Pandemic and its Aftermath: A Qualitative Interview Study
Jose Scott, Wandi Bruine de Bruin, Lila Rabinovich, Kayla de la Haye
University of Southern California

P.34
Distribution of stress response and virulence genes across salmonella enterica isolates from poultry processing
Edmund Benefo, Abani Pradhan
University of Maryland

P.35
Comparative Risk Assessments of Arsenic, Cadmium, Lead, and Mercury in Chinese Herbal Medicines Before and After the Promulgation of Limit Standards
Po-Han Lin, Yun-Yu Wu, Bao-Suei Chang, Kuen-Yuh Wu, Su-Yin Chiang
China Medical University, National Taiwan University

P.36
Evaluating Impacts to the U.S. Department of Defense (DoD) Mission from Changing Regulations and Toxicity Values for Vanadium and Cobalt
Kelsey Hendrixson, Emily Barrett
Noblis, Inc.

P.37
Projecting the viability of ecological based coastal defense in the US Atlantic coast
Henry Hausmann
University of Maryland College Park

P.38
Positioning risk in secondary education in England
Sarah Duckett
King's College London

P.39
Disaster risk literacy: an educational approach to building disaster resilient communities
Joshua McDuffie
Vanderbilt University

P.40
Toward a better understanding of the effects of communicating uncertainty: explicating the uncertainty information processing model
Chelsea Ratcliff, Rebekah Wicke, Helen Lillie, Jakob Jensen
The University of Georgia, Cornell University, University of Iowa, University of Utah

P.41
Climate Change Communication for Urban Residents in Southeast Michigan
Sandaruwan Pradeep Kumara Subasinghe Mudiyanselage
Wayne State University

P.42
Title: Exploring Pluralistic Ignorance in Republican Support for Climate Mitigation Policies
Graham Dixon, Christopher Clarke, P. Sol Hart, Jeffrey Jacquet, Darrick Evensen
Ohio State University, George Mason University, University of Michigan, University of Edinburgh

P.43
Air pollution and the risks to public health in the United Arab Emirates: A systematic literature review
Grace Kilroy, Samrin Ahmed Kusum, Jacqueline MacDonald Gibson
North Carolina State University

P.44
Dose-response assessment of dioxin-like mixtures via a Bayesian framework of mechanism-based data integration
Yun Zhou, Kan Shao
Indiana University Bloomington

P.45
A cost-benefit perspective for assessing alternative approaches to lead prevention among homes relying on private wells
Timothy Leung, Jacqueline MacDonald Gibson
North Carolina State University

P.46
Analyzing the redistribution of federal disaster aid through machine learning
Adriana Bryant, Allison Reilly, Deb Niemeier
University of Maryland

P.47
Organic vs nonorganic farming: food safety and risk assessment of glyphosate residues in chicken.
Aleem Waris, Maria Chiesa, Sylvia Costa, Rachel Dubbs
University of Maryland

P.48
Does transparency in fact-checking improve correction acceptance?
Jamie Gentry
University of Florida

P.49
Handling Risks of Catastrophic Cyber Attacks: A Red-Teaming Analysis from Insurance Perspective
Omer Keskin
University at Albany

6:00 PM – 8:00 PM

Poster Session

Potomac Ballroom

P.50

Cumulative Impact Assessment: Science and Uncertainty

Uni Blake

ToxStrategies, Inc.

P.51

Implementing Environmental Justice in NAAQS: The Perspective of the Regulated community

Omobola A

American Petroleum Institute

P.52

Range of the Perfluorooctanoate (PFOA) Safe Dose for Human Health: An International Collaboration

Michael Dourson

TERA

P.53

Calibration and evaluation of PFAS toxicokinetics and implementation in a community-facing tool to estimate individual serum levels

Meghan Lynch, Weihsueh Chiu, Claire Lay, Rachel Rogers

Abt Associates, Texas A&M University, Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry

P.54

Risk and hazard assessment of occupational cancer among firefighters

Tee Guidotti

Occupational + Environmental Health & Medicine

P.55

Engaging Stakeholders and Researchers to Co-Create Sustainable Phosphorus Solutions

Corieander Griebel, Khara Grieger

North Carolina State University

P.57

Stakeholder Views and Needs for Decreasing Risk and Increasing Sustainability of Phosphorus Management

Khara Grieger, Ashton Merck, Corieander Griebel

North Carolina State University, NC State University

P.58

Estimating Public Health Risk of Infectious Disease Events: A Canadian Approach to Rapid Risk Assessment

Linda Vrbova, Sai Priya Anand, Clarence Tam, Sharon Calvin, Dima Ayache, Lisa Slywchuk, Rukshanda Ahmad, Eleni Galanis, Jan Trumble Waddell

Public Health Agency of Canada

P.59

A picture says thousands of words: unlock the dermal exposure information from pictures using a hybrid deep learning method to support product safety assessment (a proof of concept)

Hua Qian, Manisha Kotha, Tuan A Tran, Hassan Chughtai, Haining Zheng

ExxonMobil Biomedical Sciences, Inc., Exxon Mobil, ExxonMobil Technology and Engineering Company

P.60

Risk-benefit analysis for dioxin and its compounds

Yongjin Lee, Youngwook Lim, Kyungjun Jung

Yonsei Univsersity, Yonsei University, Yon

P.61

Individual exposure assessment of daily inhaled PM2.5 dose in micro-environments

Yongjin Lee, Min Ji Park, Dongjun Lee, Taeyeong Yu, Kyungjun Jeong

Yonsei Univsersity, Yonsei Univerisity, Institute of Environmental Research, Department of Preventive Medicine, Yonsei University

P.62

Quantitative microbial risk assessment of raw milk for multiple foodborne pathogens in raw milk in the US

Angelica Godinez Oviedo, Naim Montazeri, Minho Kim, Mohan Li, Gabriela K. Betancourt-Barszcz, Natasha Ng, Olufemi Olatoye, Alexis Mraz, Scott Meschke

UAQ, University of Florida, Illinois State University, University of Nebraska-Lincoln, Texas Tech University, Arizona State University, Morgan State University; University of Ibadan, The College of New Jersey, University of Washigton

P.63

Methods used for rapid risk assessments of public health events: a scoping review

Dima Ayache, Linda Vrbova, Lisa Waddell, Sai Priya Anand, Melanie Cousins, Lisa Slywchuk, Katja Sling, Emilie Peron, Jan Trumble Waddell

Public Health Agency of Canada, World Health Organization, WHO

P.64

A refinement of a quantitative microbial risk assessment model for Salmonella enterica by the consumption of chicken in the central region of Mexico using whole genome sequencing

Angelica Godinez Oviedo, Adrián Gómez-Baltazar, Montserrat Hernández Iturriaga

UAQ, Universidad Autónoma de Querétaro

P.65

Comparative Semi-Quantitative Risk Assessment of Harmful and Potentially Harmful Constituents in Tobacco Products

Zhengxi Wei, Chastain Anderson, Timothy Langston, Wanyoike Kangethe, Donna Smith

Altria, Altria Client Services

P.66

Understanding School Shootings in the United States: Analyzing Patterns, Social Factors, and Preventive Measures for Safer Schools

Seyed Ahmad Torabzadeh, Jun Zhuang

University at Buffalo

P.67

Game Theory Analysis of US-Canada Collaboration in Mitigating Canada's Wildfires and Smoke Health Risks

Mina Samiei Nasab, Jun Zhuang

University at Buffalo

P.69

Human health risk assessment tools and risk assessments for abandoned mine lands (AML)

Natasha Ng

Arizona State University

P.70

NO_2 as a Surrogate for Gaseous Oxides of Nitrogen

Qingyu Meng, Adam Reff, Stephen McDow

USEPA

P.71

Health Risk Evaluation on Recycled Plastics in Circular Economy

Naoya Kojima, Tomoko Oguri, Naohide Shinohara, Isamu Ogura, Hideo Kajihara, Eriko Yamazaki, Keisuke Nakamura, Hanari Nobuyasu, Masashi Gamo

The National Institute of Advanced Industrial Science and Technology, The Advanced Industrial Science and Technology, National Institute of Advanced Industrial Science and Technology (AIST)

6:00 PM – 8:00 PM

Poster Session

Potomac Ballroom

P.72

Investigating the tension between risk governance recommendations and technical uncertainty modelling in practice: a study of four mathematical models for offshore wind farms

Solene Huynh

University of Strathclyde

P.73

Estimating Interspecies Pharmacodynamic Data-Derived Extrapolation Factors for Organophosphate Pesticides

Richard Reiss, Ann Jonynas, Paul Whatling, Betsy Codrea, Christian Strupp

Exponent, AMVAC, FMC Corporation, Gowan Company

P.74

Partisan winds: reframing new windfarm developments to overcome identity-protective cognition

Aitor Marcos Diaz, Patrick Hartmann, Joe Árvai

University of Southern California, University of the Basque Country UPV/EHU

P.75

Interactive map of risk indicators for critical infrastructure systems: a case study of Greater-Houston power infrastructure

Ada Novak, Paul Johnson, Hiba Baroud

Vanderbilt University

P.76

An Impact of System Down Risk Disclosure on Maintenance Service Personnel Effort and System Liability: An Experimental Economic Analysis with Student Subjects

Ryoji Makino, Jun-Ichi Takanori, Takanori Kudo, Keiko Aoki, Kenju Akai

National Institute of Advanced Industrial Science and Technology, Setsunan University, Saitama University, Shimane University

P.77

Assessment of antibiotic-resistant infection risks associated with reclaimed wastewater irrigation in intensive tomato cultivation

Hunter Quon

University of California, Irvine

P.78

Modeling interdependent transit network resilience under future flooding scenarios

Jack Watson, Samrat Chatterjee, Auroop Ganguly

Northeastern University, Pacific Northwest National Laboratory, Northestern University

P.79

Quantitative microbial risk assessment of viral infection in exposed children at public parks fertilized with recycled urine

Syed Anjerul Islam, Julia Harrison, Jade Mitchell, Kerry Hamilton

University of North Carolina at Chapel Hill, North Carolina State University, Michigan State University, Arizon State University

P.80

Integrating pharmaceutical reduction strategies with wastewater-based epidemiology

Julie Barnett, Scott Watkins, Megan Robertson, Ruth Barden, Barbara Kasprzyk-Hordern

University of Bath, University of the West of England, Wessex Water

P.81

Estimating potential new U.S. blood donor deferrals with an individual HIV risk assessment for at-risk sexual behavior

Yin Huang, Barbee Whitaker, Diane Gubernot, Anne Eder, Debby Herbenick, Tsung-chieh Fu, Richard Forshee, Steven Anderson

US FDA, Indiana University

P.82

Mapping public safety power shutoffs: intersections of outage risk, community vulnerability, and energy resilience cost

Bethany Kwoka, Patrick Murphy, Yunus Kinkhabwala, Yanelli Nunez, Elena Krieger

PSE Healthy Energy

P.83

Dose-Response Analysis for SARS-CoV-2

Shaista Shah

Student

P.84

What is process risk?

Samuel Denard

Empirical Products

P.85

Assessing the impact of culvert failure from an equity lens.

Joshua Govina

University Of Massachusetts, Amherst

P.86

European blackouts: key lessons and insights from operational experience

Andrej Stankovski, Blazhe Gjorgiev, Leon Locher, Giovanni Sansavini

ETH Zurich

P.87

Decision-making and Risk-Mitigating Behaviors against Heat Stress among Secondary School Students

Masahiko Haraguchi

Harvard University

10:30 AM – 12:00 PM

T2-A: Food Safety Policies: Update on Recent Risks and Regulations

Rock Creek Ballroom

Chair: Sandra Hoffmann

10:30 am **T2-A.1**

2022 Cost of Foodborne Illnesses in the U.S.

Sandra Hoffmann, Elaine Scallan Walter, Alice White, Robert B. McQueen, Jae-Wan Ahn

USDA Economic Research Service, Colorado School of Public Health

10:45 am **T2-A.2**

Assessing the Association between Dietary Exposure to Lead, Arsenic, and Cadmium and Adverse Health Effects: A Comprehensive Evaluation Using Bradford Hill Criteria

Patricia Hsu, Felicia Wu

Michigan State University

11:00 am **T2-A.3**

Cancer burden from dietary exposure to inorganic arsenic in the United States: Risk assessment and policy implications

Rubait Rahman, Felicia Wu

Michigan State University

11:15 am **T2-A.4**

A Solution for FDA's Human Foods Program

Richard Williams

RichardAWilliams.com

11:30 am **T2-A.5**

The science behind FSIS' proposal that Salmonella is an adulterant in not-ready-to-eat breaded stuffed chicken products

Janell Kause

Food Safety and Inspection Service

10:30 AM – 12:00 PM

T2-B: Symposium: Updating the Social Amplification of Risk Framework for Risk Science and Practice in the 21st century

River Birch A

Chair: Angela Bearth

10:30 am **T2-B.1**

Social Amplification and Attenuation: The Role of Trust and Expectations

Angela Bearth, Seth Tuler

ETH Zurich, Worcester Polytechnic Institute (WPI)

10:45 am **T2-B.2**

SARF in the literature since 2003

Thomas Webler

Social and Environmental Research Institute

11:00 am **T2-B.3**

Dispelling myths about the social amplification of risk I: amplified risks are real risks

Terje Aven, Rob Goble, Ortwin Renn

University of Stavanger, Clark University, Research Institute for Sustainability – Helmholtz Center Potsdam (RIFS)

11:15 am **T2-B.4**

Dispelling myths about the social amplification of risk II: the public are not the only parties engaged in amplification.

Rob Goble, Lisbet Fjæran, Kenneth Pettersen

Clark University, University of Stavanger

11:30 am **T2-B.5**

Visualising the interactive and dynamic nature of the social amplification and attenuation of risk

Lisbet Fjæran, Kenneth Pettersen

University of Stavanger

10:30 AM – 12:00 PM

T2-C: Foodborne Microbial Risks

River Birch B

Chair: Jade Mitchell

10:30 am **T2-C.1**

Trends in Salmonella Infantis human illness incidence and chicken carcass prevalence in the USA; 1996-2019

Mark Powell

USDA/OCE

10:45 am **T2-C.2**

Understanding the limit: a reverse quantitative microbial risk assessment to investigate low-level concentration of Listeria monocytogenes in apple packinghouses from epidemiological data

*Tyler Stump, Kara Dean, Jade Mitchell**

Michigan State University

11:00 am **T2-C.3**

A meta-analysis of conditions effecting decay and growth of Escherichia coli O157:H7 in leafy greens

Joshua Owade, Jade Mitchell, Teresa Bergholz

Michigan State University

11:15 am **T2-C.4**

Quantitative risk assessment-epidemic curve prediction model for leafy green outbreak investigation

Hao Pang

Food and Drug Administration

11:30 am **T2-C.5**

Implementation of gene editing into the food system: opportunities and barriers

Gulbanu Kaptan, Huw Jones, Edgar Meyer, Joshua Weller, Baruch Fischhoff

University of Leeds, Aberyswyth University, Carnegie Mellon University

10:30 AM – 12:00 PM

T2-D: Advances in Natural Hazards Modeling

Meeting Room 2

Chair: Pia-Johanna Schweizer

10:30 am **T2-D.1**

Machine Learning Algorithm for Early Warning System for Tsunami Triggered by the Volcanic Activity: Case of Anak Krakatau Volcano Indonesia

Elmo Juanara, C.Y. Lam

Japan Advanced Institute of Science and Technology (JAIST)

10:45 am **T2-D.2**

Criteria-based visualization design for hazard maps

Pia-Johanna Schweizer, Max Schneider, Fabrice Cotton

Research Institute for Sustainability – Helmholtz Centre Potsdam, U.S. Geological Survey, German Research Institute for Geoscience – Helmholtz Centre Potsdam

11:00 am **T2-D.3**

Surrogate Models to Predict Flood Hazard under Evolving Coastal Conditions

David Johnson

Purdue University

11:15 am **T2-D.4**

A framework for modelling the probability of flooding under levee breaching

Thomas Wallace, Tom Logan, Kaley Crawford-Flett, Matthew Wilson

University of Canterbury, University of Auckland

11:30 am **T2-D.5**

Hybrid Decision Support by Combining Economic Assessment and Bayesian Networks for Multi Criteria Decision Analysis: A Case Study of Adaptation Measures for Hurricane Risk

*Bona Ryan, David Bristow, Agil Darmawan**

University of Victoria, PT Perusahaan Listrik Negara Indonesia

10:30 AM – 12:00 PM

T2-E: Roundtable: Hierarchy of Use: Risk Decision-making and Integrated Thinking

Meeting Room 3

Chair: Mary O'Reilly

Occupational and environmental risk is most often described as a combination of severity of the outcome and likelihood of its occurrence. For chemical exposures that typically means toxicity of the material and duration/frequency of exposure. Focusing primarily on these two parameters usually precludes evaluating why the chemical is used. For most chemicals, however, there is a hierarchy of use. For example, using PFAS in chip manufacturing may be assessed to be of higher priority than using PFAS on frying pans, skis and dental floss. Ethylene oxide is used primarily to sterilize medical plastic items. Many of those plastic items, however, could be made from glass that can be autoclaved. Other examples include asbestos, PCBs and bisphenol A.

A hierarchy of use would value a chemical based on its society-wide negative impacts as well as its society-wide benefits and could aid ESG reporting. Howard Glickman in "Buying Power" has documented American consumer activism that has certainly played a part in the removal of bisphenol A from some plastics, especially baby products, due to its ability to bind to estradiol receptors and mimic estrogen effects. Disposing of toxic but useful chemicals and their breakdown products results in harm to neighboring communities around the world. A hierarchy of use, in contrast to a ban, would provide a systematic way to limit the production and use of toxic chemicals and their effects on both workers and downstream communities.

Evaluating risk from a hierarchy of use perspective raises valuable questions. When are adverse effects first recognized? At what point do adverse effects outweigh beneficial use? Whose responsibility is it to clearly and transparently communicate risks associated with a useful product? And to whom? What is the role of regulators, investors in the ESG movement, educators, consumers and the general public? How should companies address these topics in ESG-related disclsures? Integrating a hierarchy of use into human health risk assessment would enable more judicious use of toxic chemicals by balancing society-wide harmful effects and society-wide benefits.

Panelists

- Fred Boelter
- Frank Hearl
- Regina Pana-Cryan
- Margaret MacDonell

10:30 AM – 12:00 PM

T2-F: Roundtable: Understanding the Potential of Wastewater-Based Epidemiology for Risk Management

Meeting Room 4

Chair: Patrick Gurian

Wastewater serves as a collective pool of biological and chemical markers shed by individuals in a community. By analyzing these markers, such as viral RNA, metabolites, and pharmaceuticals, researchers can estimate the overall health status of the population, an approach referred to as wastewater-based epidemiology (WBE). WBE provides a holistic perspective, capturing both symptomatic and asymptomatic cases, allowing for the identification of diseases that might otherwise go undetected. This insight aids in early intervention, targeted public health measures, and improved population health management.

One of the most significant advantages of WBE is its potential for early detection and monitoring of pandemics. By analyzing wastewater samples from specific locations, researchers can identify the presence of viral pathogens, such as SARS-CoV-2, even before clinical cases are reported. This timely information can help public health authorities take proactive measures to curb the spread of the disease, allocate resources, and implement targeted interventions to protect vulnerable populations.

WBE enables the evaluation of the effectiveness of various public health interventions and control measures. By monitoring wastewater samples before and after the implementation of interventions like vaccination campaigns or lockdown measures, researchers can assess their impact on disease prevalence and transmission. This data-driven approach provides valuable insights into the efficacy of public health strategies, facilitating evidence-based decision-making.

Wastewater surveillance also provides a unique opportunity to monitor drug consumption patterns and public health trends. By analyzing wastewater for the presence of drug metabolites, researchers can estimate drug use within a population, identify emerging drug trends, and evaluate the efficacy of substance abuse prevention programs. This information aids policymakers and public health agencies in designing targeted interventions to address drug-related challenges.

Panelists

- Charles Haas
- Mark Weir
- Raul Gonzalez
- Kyle Curtis

10:30 AM – 12:00 PM

T2-G: Security and Disaster Management

Meeting Room 5

Chair: Ronnie E. Hill Jr.

10:30 am **T2-G.1**

Cybersecurity Requirements for a connected world

ChoongHee Han, Naresh Adhikari

Korea Power Exchange, Slippery Rock University

10:50 am **T2-G.2**

Cyber Risk Loss Distribution of Drone Delivery Systems: A Study of Amazon Drone Deliveries in College Station, TX

Petar Jevtic, Nicolas Lanchier, Stefano Chiaradonna

Arizona State University

11:10 am **T2-G.3**

Pandemic and other Stressors Disrupt Investments for Disaster Mitigation

Ronnie E. Hill Jr., Davis Loose, Barry Ezell, James H. Lambert, DeAndre Johnson

University of Virginia, Old Dominion University

10:30 AM – 12:00 PM

T2-H: What's in the Air – Air Pollution

Meeting Room 16

Chair: Sabine Lange

10:30 am **T2-H.1**

Does ambient air pollution influence biochemical markers of liver injury? Findings of a cross-sectional population-based survey.

Sabit Cakmak, Kimberly Mitchell, Anna Lukina, Jeffrey Brook, Subramanian Karthikeyan, Robert Dales

Health Canada, University of Toronto

10:50 am **T2-H2**

Derivation and application of comparison values and action levels for use in mobile air monitoring

Sabine Lange

Texas Commission on Environmental Quality

11:10 am **T2-H.3**

Health and climate benefits of electric school bus adoption in the United States

Ernani Choma

Harvard University

1:30 PM – 3:00 PM

T3-A: Roundtable: The Future of the Democratic Process and the Clean Energy Transformation in a Post-Truth Society

Rock Creek Ballroom

Chairs: Bonnie Ram, Pia-Johanna Schweizer

The urgency of climate change and the threat of misinformation via social media require that we revisit the sufficiency of tools to engage publics and stakeholders in risk decision making. Climate change due to fossil fuel combustion is imposing significant and rapidly increasing costs on people and institutions worldwide. To mitigate these harms there is an urgent need to decarbonize energy systems, however a major impediment is public and stakeholder opposition. Opposition is met at national and subnational policymaking venues and in communities where renewable energy infrastructure is proposed. Opposition is fueled in a large part by misinformation campaigns that are growing more sophisticated and effective and threaten to balloon with the increased use of deep fakes and other techniques enabled by artificial intelligence. This roundtable reconsiders the need and direction for public and stakeholder participation in risk decision making by focusing on this question: Are the present mechanisms, strategies, and laws for public engagement sufficient to meet the challenge posed by misinformation/social media and the urgency of climate change? Discussion begins with this question and then transitions to consider policy interventions, new engagement strategies, and other actions that should be taken to address the shortcomings.

After the three 5-minute presentations, the panelists will engage the roundtable audience in exploring the challenges and questions introduced, particularly how to rapidly accelerate renewable energy deployments whilst taking the time to engage citizens and incorporate public values. The panelists hope that this discussion will create innovative approaches to public participation and capacity building to facilitate and accelerate the energy transition in advanced and emerging economies.

Panelists

- Thomas Webler

1:30 PM – 3:00 PM

T3-B: Roundtable: Improving Communication of Risk and Uncertainty Across Federal Agencies

River Birch A

Chair: Paul Han

Federal agencies tasked with safeguarding the well-being of the US public face the common challenge of effectively communicating the risks of various hazards, as well as the nature and extent of scientific uncertainty about these risks. Effective communication of risk and uncertainty enables the public to understand the likelihood of important hazards, assess the strength of available risk information, and take appropriate action to mitigate and respond to these hazards. Yet effective communication of risk and uncertainty to the public raises key questions about what information to communicate, why, when, how, and to whom. Effective risk and uncertainty communication is also challenging due to human factors including limitations in literacy and numeracy, cognitive biases and heuristics (mental shortcuts), the spread of misinformation and disinformation, and limited access to information among different communities and stakeholders. To address these many challenges, a federal inter-agency workgroup (IWG) on Communicating Hazard Information and Other Types of Uncertainty was convened by the National Science and Technology Council (NSTC) Subcommittee on Social, Behavioral and Economic Sciences. This goal of this IWG is to improve the quality, consistency, timeliness, and appropriateness of efforts to communicate the risks and uncertainties of various hazards to the general public. Toward this end, the IWG is identifying key needs, available resources, and potential strategies to promote a more intentional and coordinated approach to communicating risk and uncertainty across federal agencies; increase translation of social and behavioral evidence on risk and uncertainty communication into best practices; and ensure meaningful engagement of community stakeholders in these efforts. In this Roundtable discussion, IWG members from different federal agencies (e.g., DHS, EPA, NIH, NPS, NOAA) will discuss the initiative and the key challenges it involves, and identify opportunities for moving this work forward.

Panelists

- Madeline Beal
- Tom Fish
- Rik Legault
- Hank Jenkins-Smith

1:30 PM – 3:00 PM

T3-C: International Food Security Risks

River Birch B

Chair: Wayne Landis

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

FIRE: the Food Import Risk Explorer, a tool for the comparative risk assessment of imported foods in the Canadian food supply.

Ashwani Tiwari, Cory Lindgren, Christina Sparr, Justin Falardeau, Mohamed Afifi, Alia'a Ghiba, Catherine Semple, Emma Hartnett, Gregory Paoli

Canadian Food Inspection Agency, Risk Sciences International

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

Do blood metals influence lipid profiles? Findings of a cross-sectional population-based survey

Sabit Cakmak

Health Canada

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

Risk assessment of gene drive constructs as an approach for controlling populations of pests and disease bearing hosts.

Wayne Landis, Steven Eikenbary, Ethan Brown

Western Washington University, Integral Corporation, University of Notre Dame

1:30 PM – 3:00 PM

T3-D: Risk impacts of tropical cyclones

Meeting Room 2

Chair: Zaira Pagan Cajigas

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

Broadcast meteorologist and emergency manager interpretations of a redesigned hurricane threats and impacts visualization

Robert Prestley, Rebecca Morss, Kenneth Broad, Alberto Cairo, Scotney Evans, Sharanya Majumdar, Brian McNoldy, Barbara Millet

National Center for Atmospheric Research, University of Miami

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

Estimating Tropical Cyclone induced Power Outages in Future Climate Scenarios' Impact on Socio-economically Vulnerable Populations and Racial Minorities

Zaira Pagan Cajigas, Seth Guikema, Charles Fant, Brent Boehlert

University of Michigan, Industrial Economic Inc.

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

Adaptive strategies for flooding risk management under climate change: A reinforcement learning application for NYC

Kairui Feng, Ning Lin, Michael Oppenheimer

Princeton University

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

The Use of Parametric Insurance via Blockchain to Improve Hurricane Event Outcomes

Steven Haynes

University of Texas at Dallas

1:30 PM – 3:00 PM

T3-E: The Economics of Risk: Theory and Global Applications

Meeting Room 3

Chair: Emma Hartnett

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

The Effect on the Poor of Near-Zero Discount Rates

Richard Belzer

Good Intentions Paving Co.

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

Preparing for High Impact, Low Frequency Events with RaCEr.

Emma Hartnett, Todd Ruthman, Paul Stanish, Hong Duan, Amy McNeely

Risk Sciences International, Transport Canada

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

Assessing Inherent Risks in Taxation for Wealth Creation

Emma Anyika

The Co-operative University of Kenya

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

An Empirical Illustration of Tri-Players Cyber Risk Model using Game Theory

*Madhu Acharyya, John Houston**

GCU, University of Stirling

1:30 PM – 3:00 PM

T3-F: Roundtable: The Test of Risk Analysis Practice: Quality, Fit for Purpose, or Both?

Meeting Room 4

Chair: Robert Waller

The Applied Risk Management Specialty Group and the Risk Policy and Law Specialty Group are jointly seeking to enhance understanding between risk analysts and risk managers to the benefit of both and of society at large. Over the past five years the exploration of understandings, and misunderstandings, between analysts and decision makers has been structured through development and publication of the Risk Analysis Quality Test Release 1.0 (RAQT1.0). This was intended to be a first attempt at codifying expectations of quality in technical risk assessments done in the service of risk decision makers. It comprises 76 questions. As expected, there was not universal agreement that the RAQT1.0 captured all the important characteristics of what would consider 'quality' risk assessment in every field, discipline, and application. Of particular concern was a charge that a risk assessment could satisfy all questions in the RAQT1.0 but still not be "fit for purpose".

Seeking to understand how the RAQT1.0 might include the fit for purpose concept has led to wanting to better understand whether "analysis quality" and "fit for purpose" are synonymous or, if not, how they differ. Can fitness for use be codified in any way that would be useful across a variety of disciplines and applications. This roundtable explores these questions as they apply in fields ranging from health risks to infrastructure risks. The addition of insights and perspectives from a diverse audience is sought.

Our objective is to understand how to enhance the mutual understandings between technical risk analysts and risk management decision makers about quality and suitability of risk assessments.

Panelists

- Zachary Collier
- Michael Dourson
- Samuel Denard
- Kara Morgan

1:30 PM – 3:00 PM

T3-G: Symposium: Integrated Disaster Risk Management: Joint Session with the International Society for Integrated Disaster Risk Management

Meeting Room 5

Chair: Adam Rose

1:30 pm **T3-G.1**

Behavioral, Environmental, Health and Other Systemic Trends Disrupting Priorities of First Responders

James H. Lambert

University of Virginia

1:50 pm **T3-G.2**

An entropy-centered approach to assessing resistance deterioration for time-based resilience

*Bilal Ayyub, Lance Curtis**

University of Maryland

2:10 pm **T3-G.3**

Climate change and disaster risk: Current situation and public policy challenges

Myriam Merad

Paris Dauphine University – PSL

2:30 pm **T3-G.4**

The IDRiM initiative to develop an implementation science

Rob Goble

Clark University

1:30 PM – 3:00 PM

T3-H: Lightning Talks: Risk Assessment Potpourri: microbial, dermal, epidemiologic, and metal modelling

Meeting Room 16

Chair: Mark Weir

1:30 pm **T3-H.1**
The Public Health Costs from Antimicrobial Resistance in Eight Common Pathogens
Katherine Toran, Andrew Estrin, Michael Lanthier
Food and Drug Administration

1:35 pm **T3-H.2**
Biofilm Ecology Modeling Method for Improved Quantitative Microbial Risk Assessment Modeling
Mark Weir, David Hibler
Ohio State University, Sustainability Institute

1:40 pm **T3-H.3**
Improving the integration of epidemiological data into human health risk assessment: what risk assessors told us they need
Sandrine Deglin, Igor Burstyn, Carl Phillips, David Miller*
Health and Environmental Sciences Institute, Drexel University, Epiphi Consulting, US Environmental. Protection Agency

1:45 pm **T3-H4**
Epidemiology: a field that is growing in importance and relevance to risk assessment
David Miller
US Environmental Protection Agency

1:50 pm **T3-H.5**
Benchmark dose modeling for epidemiological dose-response assessment using case-control studies
Francesco De Pretis, Kan Shao
University of Modena and Reggio Emilia, Indiana University

1:55 pm **T3-H.6**
A Bayesian Approach to Estimate Parameters for Children from a Pharmacokinetic Model for Methylmercury Exposure to Pregnant Women
Michael Dzierlenga, Yu-Sheng Lin, Leonid Kopylev, Deborah Segal
US EPA

2:00 pm **T3-H.7**
Assessing environmental health risks in Meghalaya, India: evaluating spatial methodologies
Ann Elise Lewallen, Erica Goto
University of Victoria, University of Arizona

2:05 pm **T3-H.8**
Risk assessment of skin disease caused by differential selection and use of PCP in the showering environment
Yihan Gao, C.Y. LAM
Japan Advanced Institute of Science and Technology

2:10 pm **T3-H.9**
Streamlining dermal risk assessment through a risk decision framework.
Paul Deleo, Elke Jensen, Andrew Maier, Silvia Maberti, Lauren Gloekler, Heather Lynch
American Chemistry Council, Dow, Cardno ChemRisk, ExxonMobil Chemical Company, Stantec ChemRisk

2:15 pm **T3-H.10**
A handbook of occupational dermal exposure factors for streamlining dermal risk assessment
Paul Deleo, Elke Jensen, Silvia Maberti, Andrew Maier, Heather Lynch, Claire Hamaji*
American Chemistry Council, Dow, ExxonMobil Chemical Company, Cardno ChemRisk, Stantec ChemRisk

2:20 pm **T3-H.11**
Risk characterization of pediatric injuries from textual emergency department records using ChatGPT: new opportunities for epidemiological surveillance
Dario Gregori, Giulia Lorenzoni
University of Padova

3:30 PM – 5:00 PM

T4-A: Roundtable: Does risk analysis have a future? A transatlantic perspective

Rock Creek Ballroom

Chair: Frederic Bouder

Risk Analysis is a relatively new discipline that developed very rapidly in the 1970s-2000s. Compared to twenty years ago, there seems to be less risk research being funded-a trend that is particularly true in Europe and may also partially apply to the US. A reason might be the lack of replacement of retired senior risk professors with new talents. As a result, universities that had been at the forefront of risk research have arguably changed their priorities. Another reason may also be the appeal of new concepts such as 'precaution' or 'sustainability' that lead to hazard-based rather than risk-based approaches. There is a concern that several new regulations – from the energy transition to chemical or food policy – are not sufficiently rooted in risk science. The European Green Deal is one such body of regulation that is very much based on hazard classifications and precautionary thinking. In the US the concept of Green chemistry may also raise similar concerns. We have also witnessed an increased focus on topics like cumulative risk that seem to be risk-based but rarely are. Is there a future for risk analysis? Do North America and Europe converge or do they diverge when it comes to the use of risk analysis? Is risk research actually in decline, or could it be that risk science is hidden in other types of research? In this round table, panellists will provide 5–10-minute interventions discussing their perspective on risk analysis in Europe and North America. They will cover a wide range of risks and disciplines.

Panelists

- Katherine McComas
- Rui Gaspar
- George Gray
- Robyn Wilson

3:30 PM – 5:00 PM

T4-B: Symposium: Watershed Resilience for Low-Capacity Communities

River Birch A

Chair: Frank Randon

3:30 pm **T4-B.1**
Watershed Resilience for Low-Capacity Communities
Igor Linkov
Engineer Research and Development Center, U.S. Army Corps of Engineers

3:50 pm **T4-B.2**
Resilience Developments at DHS
Frank Randon
DHS

4:10 pm **T4-B.3**
USACE Approach to Watershed Resilience
Michael Deegan
USACE

4:30 pm **T4-B.4**
Community engagement in watershed resilience: Anderson County in SC
David Vaughn
Clemson University

3:30 PM – 5:00 PM

T4-C: Symposium: Food Safety and Security Measures

River Birch B

Chair: Yuhuan Chen

3:30 pm **T4-C.1**
Subsistence Fish and Seafood Consumption Systematic Review: Literature Evidence Map
Amina Wilkins
USEPA

3:50 pm **T4-C.2**
Modeling within lot variability in pathogen contamination and the impact on predicted risk reduction from sampling ready-to-eat foods
Régis Pouillot, Yuhuan Chen, Jane Van Doren Goldbelt, FDA Center for Food Safety and Applied Nutrition

4:10 pm **T4-C.3**
Quantify risk reduction from sampling using L. monocytogenes in ready-to-eat foods survey data and OC curves
Yuhuan Chen, Régis Pouillot, V Jane Van Doren FDA Center for Food Safety and Applied Nutrition, Goldbelt

4:30 pm **T4-C.4**
Relative importance of preharvest, pre-rehang, and post-rehang interventions on Salmonella load in young chicken
Peter Evans, Amber Pasko, Courtney Amundsen, Scott Malcolm, Berhanu Tameru
USDA/FSIS

3:30 PM – 5:00 PM

T4-D: Natural Hazards Infrastructure Resilience

Meeting Room 2

Chair: Seth Guikema

3:30 pm **T4-D.1**
Cell phone data for determining the role of access to essential services in disaster recovery
*Tessa Swanson, Seth Guikema**
University of Michigan

3:45 pm **T4-D.2**
Assessing the effectiveness of multi-infrastructure disaster risk reduction options on metro-wide restoration timelines
David Bristow, Andrew Deelstra
University of Victoria

4:00 pm **T4-D.3**
Intelligent Decision-Making in Electrical Infrastructure Management to Promote System Resilience
Madison Horgan
Arizona State University

4:15 pm **T4-D.4**
Probabilistic seismic analysis of water supply interruptions in terms of societal impact
Rithika Dulam, Rachel Davidson, Nafiseh Solemani, Sina Naeimi
University of Delaware

4:30 pm **T4-D.5**
Risk Analysis for Coupled Power – Sewer Systems
Rosalia Otaduy-Ramirez
University of Michigan

3:30 PM – 5:00 PM

T4-E: Risk in Critical Industrial Sectors

Meeting Room 3

Chair: Zachary Collier

3:30 pm **T4-E.1**
Modeling manufacturing overproduction risks for outsourcing decisions using game theory
Zachary Collier
Radford University

3:45 pm **T4-E.2**
Enterprise Risk Management for Electrification of Cold Regions Maritime Ports
Robert Baker, Megan C. Marcellin, Dan Hendrickson, Thomas L. Polmateer, James H. Lambert*
University of Virginia, Port of Virginia

4:00 pm **T4-E.3**
The Role of Knowledge and Trust in Developing Risk Perceptions of Autonomous Vehicles: A Moderated Mediation Model
Kathryn Robinson-Tay, Wei Peng
Washington State University

4:15 pm **T4-E.4**
Geospatial cost-benefit assessment of telecommunication infrastructure protection strategies in conflict economies
Edward Oughton, Jevgenijs Steinbuks, Harris Selod
George Mason University, World Bank

4:30 pm **T4-E.5**
Analytical Review of Resilience of Ukraine's Critical Energy Infrastructure to Cyber Risks and Threats in Times of War
Andrii Davydiuk
CCDCOE

3:30 PM – 5:00 PM

T4-F: Roundtable: Integrated Engineering, Public Health, and Data Analytics: A Holistic Approach towards Crisis Mitigation, Response, and Recovery

Meeting Room 4

Chair: Benjamin Trump

In the face of ever-evolving global challenges, it is evident that an interdisciplinary approach, integrating engineering, public health, and data analytics, is indispensable in advancing both everyday life and crisis management, respectively. Traditional crisis response mechanisms have often leaned towards isolated, sector-specific responses. However, in today's complex, interconnected world, crises are no longer singular or static, making the efficacy of such approaches limited.

Engineering, in its broadest sense, offers the necessary infrastructure and technology for swift crisis management. From emergency housing following natural disasters to rapid-response medical equipment in health emergencies, the role of engineering is critical. In our increasingly urbanized world, the importance of resilient infrastructure, both physical and digital, can't be overstated.

Public health, the second pillar of our proposed approach, provides a keen understanding of the societal and individual impacts of crises. This field can identify, quantify, and communicate health risks and facilitate health-promoting responses. Their integration with engineering solutions and data analytics can enable more holistic responses.

Data analytics forms the final core element of this integrative approach. It empowers decision-makers to understand the breadth and depth of crises, predict their trajectories, and evaluate the effectiveness of interventions.

By inegrating these three disciplines, we present a holistic, robust, and adaptable approach to crisis management. This convergence enables an in-depth understanding of crisis scenarios, improves the design and implementation of responsive infrastructures, and optimizes strategies based on real-time data.

Panelists

- Christopher Cummings
- Jeffrey Keisler
- Thomas Janisko
- Cody Thornton
- Eric Powell

3:30 PM – 5:00 PM

T4-G: Risk Communication and Perception for Social Systems

Meeting Room 5

Chair: Emma Soane

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

Updating the Nuclear Regulatory Commission waste incidental to reprocessing monitoring program with Be riskSMART

Christianne Ridge, Cynthia Barr, Harry Felsher, Christepher McKenney, Stephen Koenick

US Nuclear Regulatory Commission

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

Collaboration, Digitization and Risks: How Digital Collaboration Influences Infrastructure Project Safety

Emma Soane, Vikki Edmondson, Katherine Ziegelbauer

The London School of Economics and Political Science, Northumbria University

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

Americans' views of fusion energy: Implications for sustainable public support

Kuhika Gupta, Hank Jenkins-Smith, Joseph Ripberger, Carol Silva, Andrew Fox, Will Livingston*

University of Oklahoma

3:30 PM – 5:00 PM

T4-H: Symposium: Risk Communication in the Public Sector: Challenges and Successes in Applying Science Across Government

Meeting Room 16

Chair: Madeline Beal

3:30 pm **T4-H.1**

Misinformation, Disinformation, and Coordination in Risk Communication: Reflections from East Palestine OH

Mike Nye

US Environmental Protection Agency

3:45 pm **T4-H.2**

New Approaches to Risk Communication at NOAA

Gina Eosco

NOAA

4:00 pm **T4-H.3**

A Risk Communication Training Platform for the Public Sector, Built on Best Practices from the Fields of Risk Communication and Adult Learning

Madeline Beal

US EPA

4:15 pm **T4-H.4**

Using Data to Drive Risk Decision Making and Risk Communication at WMATA

Nickea Bradley

The Washington Metropolitan Transit Authority

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

Development and Use of the Framework for Communicating Benefits, Risks and Uncertainties for Medical Products

Paula Rausch

Food and Drug Administration

8:30 AM – 10:00 AM

W1-A: Symposium: Water Security and Systems Analysis for Infrastructure Development

Rock Creek Ballroom

Chair: James H. Lambert

8:30 am **W1-A.1**
Stability and Resilience Through Water Security in Central Asia
Benjamin Trump
US Army Corps of Engineers

8:50 am **W1-A.2**
Risks of Water Scarcity and Climate in Asset Management for Energy Infrastructure
Megan C. Marcellin
University of Virginia

9:10 am **W1-A.3**
Risk of Disruption of Logistics Systems by Water Scarcity and Other Stressors
DeAndre Johnson, James H. Lambert, Benjamin Trump, Thomas L. Polmateer, Igor Linkov, Venkataraman Lakshmi, Gigi Pavur
University of Virginia, US Army Corps of Engineers, Engineer Research and Development Center

9:30 am **W1-A.4**
Water Security and Systems Analysis for Infrastructure Development
Ronnie E. Hill Jr.
University of Virginia

8:30 AM – 10:00 AM

W1-B: Symposium: Resilience in Transportation Systems

River Birch A

Chair: David Johnson

8:30 am **W1-B.1**
The impact of sea-level rise and roadway flooding on workforce accessibility for US coastal military installations
Behnam Tahmasbi
University of Maryland

8:45 am **W1-B.2**
A Graph-based Data-driven Approach for Achieving Resilient Transit Systems: A Case Study of the Washington Metropolitan Area Transit Authority
Celine Wehbe
Vanderbilt University

9:00 am **W1-B.3**
Climate Financing for Marine Transport: Analyzing the Impact of Climate Adaptation Investments in Inland Waterways
Paul Johnson
Vanderbilt University

9:15 am **W1-B.4**
Using Travel-Time to Essential Services to Identify Vulnerable and Fragile Communities
Utkuhan Genc
Purdue University

9:30 am **W1-B.5**
Path ranking approach to improve connectivity to essential service facilities and reduce inequities in accessibility
Sabarethinam Kameshwar
Louisiana State University

8:30 AM – 10:00 AM

W1-C: Symposium: Innovative Approaches to the Risk Assessment and Risk Management of Emerging Substances

River Birch B

Chair: James Ede

8:30 am **W1-C.1**
Emerging Trends in Grouping Chemicals for Regulatory and Toxicological Purposes
Kelsey Hendrixson
Noblis

8:50 am **W1-C.2**
Current Approaches to Grouping Nanomaterials for Regulatory and Toxicological Assessments
James Ede
Vireo Advisors

9:10 am **W1-C.3**
Qualifying Novel Bio-based Materials for the Market: EHS, Sustainability and Beyond
Jo Anne Shatkin
Vireo Advisors

9:30 am **W1-C.4**
Evaluating the Bioavailability of Novel Forms of Cellulose for Food Additive Applications
Brian Zhang
Vireo Advisors

8:30 AM – 10:00 AM

W1-D: Symposium: Computational applications in Sustainability, Resilience, Equity, & Engineering

Meeting Room 2

Chair: Benjamin Rachunok

8:30 am **W1-D.1**
Vehicle electrification's impact on access to essential services during long-duration power outages
Yamil Essus
North Carolina State University

8:45 am **W1-D.2**
Quantifying Disaster Impacts with the American Housing Survey
Benjamin Rachunok
North Carolina State University

9:00 am **W1-D.3**
Indices for Measuring Disaster Social Capital
Ignacio Sepulveda
North Carolina State University

9:15 am **W1-D.4**
Building a national risk and resilience planning dashboard
Tom Logan
University of Canterbury

9:30 am **W1-D.5**
Placeholder Presentation
Rabab Haider
Massachusetts Institute of Technology

8:30 AM – 10:00 AM

W1-E: Statistical Models for Engineering and Infrastruture System

Meeting Room 3

Chair: Rajesh Kandel

8:30 am **W1-E.1**
A probabilistic method to assess the risk of contamination-induced insulator flashover
Gitanjali Bhattacharjee, Ezra Jampole, Abid Kemal
Exponent, Inc.

8:50 am **W1-E.2**
Generalizable framework to mitigate above ground storage tank failure
Celine Robinson
Duke University

9:10 am **W1-E.3**
Machine learning methods to predict the occurrence of Arctic maritime incidents
Rajesh Kandel
Vanderbilt University

9:30 am **W1-E.4**
Quantum Fault Trees: Applications and Future Opportunities
Enrique Lopez Droguett, Gabriel San Martin
University Of California Los Angeles

8:30 AM – 10:00 AM

W1-F: Symposium: School Safety and Security: Models and Practices

Meeting Room 4

Chair: Jun Zhuang

8:30 am **W1-F.1**
Protecting Soft Targets
Ian Unson, Jun Zhuang
University at Buffalo

8:45 am **W1-F.2**
Reducing Risks Through Improved Crowd Modeling and Guidance in Emergency Situations: A Theoretical Approach
Milad Siami, Hamidreza Montazeri, Atefe Darabi
Northeastern University

9:00 am **W1-F.3**
School Shootings: When will the craziness end
Jimmie Oxley
University of Rhode Island

9:15 am **W1-F.4**
Simulating and optimizing resource allocation for school safety
Yusuf Ihsan Tokel
University at Buffalo

9:30 am **W1-F.5**
School Safety and Security: Models and Practices
Kevin Kapadia, Richard John, Katie Byrd
University of Southern California

8:30 AM – 10:00 AM

W1-G: Symposium: Risk Management and Emerging Biotechnology

Meeting Room 5

Chair: Henry Willis

8:30 am **W1-G.1**
Considering Risk and the Bioeconomy
Henry Willis
The RAND Corporation

8:50 am **W1-G.2**
Modelling the Value of Pandemic Characterization: Benefits and Risks
Kevin Esvelt
Massachusetts Institute of Technology

9:10 am **W1-G.3**
Practical Perspectives on Risk Management Tradeoffs Addressing the Bioeconomy and Medical Product Supply Chains
Stuart Evenhaugen
Department of Health and Human Services, Administration for Strategic Preparedness and Response

9:30 am **W1-G.4**
Mitigating Emerging Technology Risks by Considering Ethical, Legal and Societal Issues (ELSI)
Daniel Gerstein
RAND

8:30 AM – 10:00 AM

W1-H: PFAS and Plastics – Risk Communication and New Technologies

Meeting Room 16

Chair: Carrie Loomis

8:30 am **W1-H.1**
Dreaded and unknown: online risk communication and polyfluoroalkyl substances (PFAS)
Carrie Loomis, Laura Rickard, Amelia Couture Bue, Janet Yang
University of Maine, University at Buffalo

8:50 am **W1-H.2**
Uncertain and relevant? How conflicting message influences information processing about PFAS contamination
Xinxia Dong, Janet Yang
University at Buffalo

9:10 am **W1-H.3**
The Integration of microplastics and nanoplastics into large scale multiple stressor ecological risk assessments using San Francisco Bay and the Delta Region as a case study.
Wayne Landis, Emma Sharpe, Cynthia Kuhn
Western Washington University

9:30 am **W1-H.4**
Applying new technology to inform new plastics
Margaret MacDonell, Cheng Wang, Kevin Hickey, Kurt Picel
Argonne National Laboratory

8:30 AM – 10:00 AM

W1-J: Cyber- and Cryptocurrency Risks

Potomac Ballroom Salon I

Chair: Fabio Massacci

8:30 am **W1-J.1**
Decoding cryptocurrency adoption: Insights from Quebec's public sentiment and trust analysis
*Nathalie de Marcellis-Warin, Thierry Warin**
Polytechnique Montreal & CIRANO, HEC Montréal

8:50 am **W1-J.2**
Cryptocurrency market risk analysis: evidence from FZL function
Seyram Pearl Kumah
Akenten Appiah-Menkah University of Skills Training and Entrepreneurial Development

9:10 am **W1-J.3**
Cyber Expert LLM Safety Assistant (CELSA): Increasing Cybersecurity Resilience Through the Development of a Large Language Model
Madison Smith, Igor Linkov, Benjamin Trump, Kelsey Stoddard, Andrew Strelzoff
US Army Corp of Engineers, Engineer Research and Development Center

9:30 am **W1-J.4**
Technical leverage: the cybersecurity risk indicator for the software supply chain
Fabio Massacci, Ranindya Paramitha
University of Trento, Vrije Universiteit Amsterdam

8:30 AM – 10:00 AM

W1-K: Lightning Session: Energy, Climate, Uncertainty, and Cyber

Potomac Ballroom Salon II

Chair: Nick Pidgeon

8:30 am **W1-K.1**
Tools for decision-making under deep uncertainty in community adaptation: which, when and how
Patrick Curran, Anita Wreford, Tom Logan
University of Canterbury, Lincoln University

8:35 am **W1-K.2**
Validating a measure of public preferences for information about uncertain science
Chelsea Ratcliff, Blue Harvill, Rebekah Wicke
The University of Georgia, The Ohio State University, Cornell University

8:40 am **W1-K.3**
Ensuring/insuring resilient energy system infrastructure
Katherine Lonergan, Salvatore Francesco Greco, Giovanni Sansavini
ETH Zurich

8:45 am **W1-K.4**
Improving the representation of cost of capital in energy system models
Katherine Lonergan, Florian Egli, Sebastian Osorio, Giovanni Sansavini, Michael Pahle, Tobias S. Schmidt, Bjarne Steffen
ETH Zurich, Potsdam Institute for Climate Impact Research (PIK)

8:50 am **W1-K.5**
Deliberating disruption: public perceptions of in home and network impacts from heat decarbonisation in the UK
Nick Pidgeon, Gareth Thomas, Karen Henwood, Fiona Shirani
Cardiff University

8:55 am **W1-K.6**
Framework for Cyber Risk Loss Distribution of Client-Server Networks: A Bond Percolation Model and Industry Specific Case Studies
Stefano Chiaradonna, Petar Jevtic, Nicolas Lanchier, Sasa Pesic
Arizona State University

9:00 am **W1-K.7**
Assessment of the poverty-line population vulnerable to climate-driven coastal flooding in Low and Middle Income Countries (LMICs)
Allison Thomey, Edward Oughton
George Mason University

9:05 am **W1-K.8**
Global public concerns about climate change and severe weather: Evidence from the World Risk Poll
Wandi Bruine de Bruin, Patrycja Sleboda, Tsegaye Ginbo Gatiso
University of Southern California, World Bank

9:10 am **W1-K.9**
From science to stakeholder-driven institutions: confronting underground infrastructure risks
Rae Zimmerman, Debra Laefer, Carlos Restrepo, Al Leidner, Wendy Dorf, Kim Hertz, Sai Charan Kukunoor, Peter Gmelch
New York University, GISMO

8:30 AM – 10:00 AM

W1-L: Wildfire Risks

Potomac Ballroom Salon III

Chair: Erin Budzyn

8:30 am **W1-L.1**
WiSE: Wildfire Safe Evacuation Planning and Management
Mohammad Pishahang, Enrique Lopez Droguett, Marilia Ramos, Ali Mosleh*
University of California, Los Angeles

8:50 am **W1-L.2**
Are southern California recreationists fire-tired? Exploring message fatigue and perceived risk levels of national forest visitors.
Erin Budzyn, Elizabeth Perry, Adam Zwickle, Jessica Miesel, José Sánchez, Alyssa Thomas, Brian Peterson
Michigan State University, USFS, Kansas State University

9:10 am **W1-L.3**
Data-Driven Analysis of Equity in Wildfire Resource Allocation
Fatima Umar, Sayanti Mukherjee
University at Buffalo, The State University Of New York

10:30 AM – 12:00 PM

W2-A: Symposium: Cost-Benefit Analysis for Critical Infrastructure Cybersecurity

Rock Creek Ballroom

Chair: Omer Keskin

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

Cyber Risk in the US Space Sector: Exploring the Applicability of International Law to Cyber Attacks on Space Infrastructures

Brianna Bace

University at Albany

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

A Graph Neural Network Approach for Analyzing Urban Rail Transit System Threat Deterrence

Samrat Chatterjee, Rishi Sahastrabuddhe, Auroop Ganguly

Pacific Northwest National Laboratory, Northeastern University

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

Electronic Health Data Risk & Compliance

Benjamin Yankson

University at Albany

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

Cybersecurity as Cost and Profit Centre: Critical Infrastructure Perspective

C. Ariel Pinto

University at Albany, State University of New York

10:30 AM – 12:00 PM

W2-B: Symposium: Exploring Multi-Faceted Impacts of Climate Change on Energy Infrastructure

River Birch A

Chair: Renee Obringer

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

Predicting the Impact of Climate Change on Renewable Energy Generation in the USA

Joy Adul

Pennsylvania State University

10:45 am **W2-B.2**

Understanding the influence of spatio-temporal climatological variations on the trends of renewable power

Vijay Bhaskar Chiluveru

Pennsylvania State University

11:00 am **W2-B.3**

A Data-Driven Approach for Forecasting Hydropower Generation Under the Uncertainty of Water and Infrastructure Availability

Tharindu De Silva

Vanderbilt University

11:15 am **W2-B.4**

Representing Climate Impacts in Power System Planning

Andrea Staid

EPRI

11:30 am **W2-B.5**

An integrated multipronged quantitative approach to enhance the electric grid resilience under compound climatic disasters

Sayanti Mukherjee

University at Buffalo, The State University Of New York

10:30 AM – 12:00 PM

W2-C: Renewable energy and climate change mitigation

River Birch B

Chair: Elnaz Kabir

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

Risks, benefits and opportunities for utility-scale renewable energy development.

*Douglas Bessette, Jacob White**

Michigan State University

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

Accelerating Energy Transition through Implementation of Integrated Risk Management in Renewable Projects: A Case Study of Asahan 3 (2 X 87MW) Hydropower Project

*Bona Ryan, Agil Darmawan**

University of Victoria, PT Perusahaan Listrik Negara

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

A Spatiotemporal Analysis of large-scale adoption of renewable energy sources

Elnaz Kabir

Texas A&M University

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

Energy Projects and Net Zero by 2050: Can we build enough fast enough? A Canadian perspective

Monica Gattinger, Michael Cleland, Rafael Armando, Patricia Larkin*

University of Ottawa

10:30 AM – 12:00 PM

W2-D: Natural Hazards Perception & Communication

Meeting Room 2

Chair: Natalie Herbert

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

Risk communication strategies of EM organizations: implications from 2019 Arkansas River Floods

Rejina Manandhar, Ekong Peters, Bethany Swindell

Arkansas Tech University

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

Risk perception, trust and preparedness for earthquakes and tsunamis between inhabitants and tourists

Pamela Cisternas, Nicolás Bronfman, Luis Cifuentes, Paula Repetto, Javiera Castañeda

Research Center for Integrated Disaster Risk Management (CIGIDEN), Universidad Andres Bello, Pontificia Universidad Católica de Chile

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

Improving recruiting for impactful RCTs: Outcomes from two studies in climate frontline communities

Natalie Herbert, Teal Harrison, Jenna Jorns, Maria Carmen Lemos, Gabrielle Wong-Parodi

Stanford University, Adaptation International, University of Michigan

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

Combining behavioral data and computational modeling to assess societal implications of private adaptation to climate-induced hazards

Tatiana Filatova

Delft University of Technology

10:30 AM – 12:00 PM

W2-E: Foundations of Risk Analysis 2

Meeting Room 3

Chair: Mitch Small

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

Evidence-based risk assessment (EBRA) using ontology framework and Bayesian network model of causal relation of accidents: A case study of combustion devices

Xiaodong Feng, Kun Zhang, Yoshiki Mikami

Nagaoka University of Technology, Kaishi Professional University

10:45 am **W2-E.2**

Mixture Models for the Cascade of Values, Beliefs, Preferences, and Behaviors

Mitch Small

Carnegie Mellon

11:00 am **W2-E.3**

The application of the Cynefin framework in disaster risk management: predictive approaches for enhancing practices and adaptive approaches to address complexity and uncertainty.

Samir Batista Fernandes, Marcelo Luciano Vieira, Rodrigo Werner da Silva*

Instituto Científico e Tecnológico em Defesa Civil

11:15 am **W2-E.4**

Gen Z: crisis, risk and hope

Gabriel Rubin

Montclair State University

11:30 am **W2-E.5**

Agnostic risk management for High Impact Low probability Events

Gianluca Pescaroli

University College London

10:30 AM – 12:00 PM

W2-F: Symposium: Disaster Risk Reduction and Short- and Long-term Outcomes

Meeting Room 4

Chair: Allison Reilly

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

Evaluating a pre-disaster relocation subsidy plan in coastal Louisiana via high-resolution agent-based simulation

Fangyuan Li, Diako Abbasi

Purdue University, University of Maryland, College Park

10:45 am **W2-F.2**

When federal disaster aid doesn't suffice: a multivariate analysis of aid-to-damage ratios after hurricanes

Linda Waters

University of Maryland

11:00 am **W2-F.3**

Assessing adaptive capacity to hurricane-related school closures in the US

Diako Abbasi

University of Maryland, College Park

11:15 am **W2-F.4**

Rent Affordability after Hurricanes: Longitudinal Evidence from U.S. Coastal States

Kelsea Best

University of Maryland

11:30 am **W2-F.5**

Sensitivity Analysis of Voluntary Buyout and Relocation Policies via High-resolution Agent-based Modeling

Pragathi Jha

Purdue University

10:30 AM – 12:00 PM

W2-G: Emerging Risks – Similarities Across Contexts

Meeting Room 5

Chair: Christopher Doehring

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

A framework for risk communciation on emergign tehcnologies

Anca Rusu

Dauphine University Paris

10:45 am **W2-G.2**

How risk communication strategies shape public attitudes: the case of 5G infrastructure

Yunzhe Liu

University of Michigan, Ann Arbor

11:00 am **W2-G.3**

The uncanny underground: subsurface associations and their implications for perceptions of subterranean technologies

Catherine Lambert, Dominic Balog-Way, Katherine McComas, Julia Cousse, Evelina Trutneyte

Cornell University, University of Geneva

11:15 am **W2-G.4**

Workshopping trust and trustworthiness of AI from a risk communication perspective

Ann Bostrom, Julie Demuth, Christopher Wirz, Mariana Cains, Andrea Schumacher, Deianna Madlambayan, Jacob Radford

University of Washington, National Center for Atmospheric Research, Cooperative Institute for Research in the Atmosphere (CIRA), Colorado State University (CSU)

11:30 am **W2-G.5**

Autonomous Vehicle (AV) Risk Perspectives

Christopher Doehring, Zaira Pagan Cajigas, Robert Bordley, James Bagian, Xunbi Ji, Minghao Shen, Gabor Orosz, Seth Guikema

University of Michigan

10:30 AM – 12:00 PM

W2-H: Symposium: Interventional Probability of Causation with Potential Applications to Formaldehyde Leukemogenicity

Meeting Room 16

Chair: Kenneth Mundt

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

Causal Epidemiology: overview of current approaches

Anthony Russell

Stantec

10:45 am **W2-H.2**

The Importance of Evidence-Based Methods and Critical Appraisal of Systematic Biases in Evaluating Causation: Case Study on Formaldehyde and Lymphohematopoietic Cancers

Daniele Wikoff

ToxStrategies

11:00 am **W2-H.3**

Individual Probability of Causation

Tony Cox, George Maldonado

Cox Associates, University of Minnesota School of Public Health

11:15 am **W2-H.4**

Interventional Probabilities of Causation (IPoC) with epidemiological and partial mechanistic evidence: benzene vs. formaldehyde as chemical myeloid leukemogens

Kenneth Mundt, Tony Cox, William Thompson

University of Massachusetts, Cox Associates

11:30 am **W2-H.5**

Panel Discussion: Application of Advanced Causal Methods

Margaret Murray, Tony Cox, Ted Simon, William Thompson, Kenneth Mundt

Center for Truth in Science, Cox Associates, Ted Simon LLC, University of Massachusetts

1:30 PM – 3:00 PM

W3-A: Roundtable: Space Risk: Planetary Protection against Contamination and Planetary Defense against Asteroids

Rock Creek Ballroom

Chair: Jonathan Wiener

Today space exploration is being actively pursued by numerous governments, as well as by numerous private corporations. These actors are undertaking many missions for diverse purposes including scientific research, communications, commerce, mining, military forces, and planetary defense – not only in Earth orbit and on our Moon, but also on Mars, asteroids, and beyond. They confront an array of emerging space risks, including operational accidents, space debris, space weather, geopolitical conflict, human health in space, and more. This session will focus on two key challenges: (i) "Planetary Protection" to assess and reduce the health and ecological risks of microorganisms being transported from one planet to another, such as forward contamination from Earth to other planets, and backward contamination from Mars Sample Returns to Earth; and (ii) "Planetary Defense" to assess and prevent collisions by large asteroids and other Near-Earth Objects that could cause local disasters or a global mass extinction event. Biosafety protocols to prevent forward and backward contamination have been developed by COSPAR and national space agencies over several decades; today their application to the Mars Sample Returns (being collected on Mars now, and planned to return to Earth within a decade) remains under discussion, with uncertainties regarding questions such as: how to recognize and assess unfamiliar astrobiology; how and where to build adequate biosafety laboratory facilities to study the samples; how to make decisions about scientific advances with ultra-low-probability risks of planet-scale catastrophe; which current laws may apply or new laws may be needed (e.g. laws on environmental impact assessment, pandemic infectious disease, and invasive species); and how to enlist coooperation by other spacefaring nations. As to planetary defense, the project by NASA & partners to start deflecting asteroids (demonstrated by the pathbreaking DART mission in 2022) exhibits a confluence of expert risk analysis, astute aerospace engineering, and carefully cultivated political support for funding measures to prevent low-probability global catastrophic risk – and thus raises questions about how best to address other higher-risk asteroids, and how to apply these lessons to other extreme risks. Existing space law, such as the 1967 Outer Space Treaty, calls on governments to address some of these issues, but its coverage may have gaps, its standards may need updating for newly emerging risks, its translation into national government policies may be incomplete, and its ability to reach private actors may be in question. New or improved approaches by scientific and social communities, national governments, private corporations, and international regimes may be needed to address emerging space risks.

1:30 PM – 3:00 PM

W3-B: Climate Change and Public Health

River Birch A

Chair: Jacqueline MacDonald Gibson

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

Quantifying the burden of disease attributable to ambient air pollution and climate change in the United Arab Emirates

Tongchuan Wei, Jacqueline MacDonald Gibson, Nick Kruskamp, Nathan Ellermeier*

North Carolina State University, RTI International

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

Balancing Climate Resilience and Adaptation for Caribbean SIDS: Promoting Institutional Capacities

Stephanie Galaitsi, Benjamin Trump, Igor Linkov, Christopher Cummings

US Army Engineer Research and Development Center, US Army Corps of Engineers

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

Climate change and the risk of cardiovascular diseases in high-income countries: A systematic literature review

Samrin Ahmed Kusum, Grace Kilroy, Jacqueline MacDonald Gibson

North Carolina State University

1:30 PM – 3:00 PM

W3-C: Adaptive Capacity and Preparedness

River Birch B

Chair: Cameron MacKenzie

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

Practitioners' Perception of Self and Perception of Adaptive Capacity to Extreme Weather Events in the U.S. Gulf Coast Region

Erica Goto

University of Arizona

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

Training for infrastructure surprise

Thomas Seager, David Alderson, Daniel Eisenberg, Emily Pesicka, Michelle Hancock

Arizona State University, Naval Postgraduate School

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

Modeling and Assessing Capability-Based Planning for Emergency Preparedness

Cameron MacKenzie, Matthew Gabriel

Iowa State University

1:30 PM – 3:00 PM

W3-D: Environmental Justice, Hazards, and the Built Environment

Meeting Room 2

Chair: Patrick Murphy

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

Examining disparities in access to critical facilities using fine-grained human mobility network

Zhiyuan Wei, Sayanti Mukherjee

University at Buffalo, The State University Of New York

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

Mapping Proximity to Environmental Injustices and Risk Perception of Climate Change

*Alex Segrè Cohen, Catherine Slavik**

University of Oregon

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

Identifying Vulnerable Regions by Measuring Accessibility to Critical Infrastructures Using Egonets

Sukhwan Chung

US Army Engineer Research and Development Center

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

Resilience Hubs: Where will it be hardest to serve the most vulnerable?

Patrick Murphy

PSE Healthy Energy

1:30 PM – 3:00 PM

W3-E: Symposium: Exploring the Role of Psychological Factors in Shaping Judgments and Decisions on Societal Issues

Meeting Room 3

Chair: Caitlin Drummond Otten

1:30 pm **W3-E.1**
Food disgust influences how people perceive risks associated with immigrants
Michael Siegrist
ETH Zurich

1:45 pm **W3-E.2**
Intuitive Toxicology: Beliefs about New Approach Methods for Chemical Risk Assessment Among Risk Assessors and the Public
Angela Bearth
ETH Zurich

2:00 pm **W3-E.3**
Risk perception, science communication, and public understanding of battery usage and storage
Alex Segrè Cohen, Bunquin Jon Benedik
University of Oregon

2:15 pm **W3-E.4**
Do individuals selectively engage their scientific reasoning abilities?
Caitlin Drummond Otten
Arizona State University

2:30 pm **W3-E.5**
That's Funny: The Role of Humor in Risk and Benefit Perceptions and Support for Geothermal Energy
Sara Yeo, Michael Cacciatore, Isabelle Freiling, Meaghan McKasy, Leona Y.F. Su, Sarah Rose Siskind, James Caven
University of Utah, University of Georgia, Utah Valley University, University of Illinois at Urbana-Champaign, Hello SciCom

1:30 PM – 3:00 PM

W3-F: Symposium: Bringing Sex Toys Out of the Dark – A Convergent Approach to Identifying and Mitigating Potential Health Risks

Meeting Room 4

Chair: Joana Sipe

1:30 pm **W3-F.1**
Problem introduction, observed data and policy gaps that instigated this work, and motivation for convergent approach.
Jaleesia Amos, Christine Ogilvie Hendren
Duke University, Appalachian State University

1:40 pm **W3-F.2**
Experimental data conducted by the co-author team to corroborate concerns about potential sex toy exposures and hazards.
Joana Sipe
Duke University

1:55 pm **W3-F.3**
Conceptual introduction of multi-perspective approach to risk management with a panel of diverse stakeholders
Zoe Ligon, Jaleesia Amos
Duke University

2:10 pm **W3-F.4**
Moderated Panel with Government, Journalist, Retail, Legal Scholar, and Exposure Scholar Perspectives
Joana Sipe, Christine Ogilvie Hendren
Duke University, Appalachian State University

1:30 PM – 3:00 PM

W3-G: Antecedents to Trust and Behavior

Meeting Room 5

Chair: Richard John

1:30 pm **W3-G.1**
Associations of fear and anger with risk perceptions and preventive behaviors during the COVID-19 pandemic: May and December 2020
Patrycja Sleboda, Wandi Bruine de Bruin, Joe Árvai, Caitlin Drummond Otten, Lauren Lutzke, Alex Cohen
University of Southern California, Arizona State University, University of Oregon

1:45 pm **W3-G.2**
Validity of Behavioral Measures of Risk-Taking
Richard John, Kevin Kapadia, Coco Tang
University of Southern California

2:00 pm **W3-G.3**
When does trust matter? Examining characteristics of behavior moderating effects of trust on compliance intentions
Hwanseok Song, Prudence Mbah
Purdue University

2:15 pm **W3-G.4**
Public attitudes and perspectives on the tradeoffs associated with limiting nighttime lighting
Andrew Fox, Maggie Leon-Corwin, Hank Jenkins-Smith, Carol Silva, Cheyenne Black, Jeffrey Kelly, Kyle Horton, Carolyn Burt, Ali Khalighifar, Grace Trankina
University of Oklahoma, Colorado State University

2:30 pm **W3-G.5**
Licensed to greenwash? Investigating corporations' approach to sustainability communication
Shupei Yuan, Haoran Chu
Northern Illinois University, University of Florida

1:30 PM – 3:00 PM

W3-H: Cyber: Indicators vs Regulators

Meeting Room 16

Chair: Ruby Booth

1:30 pm **W3-H.1**
Shifting With the Adversary: Developing Indicators for A Changing Cyber Landscape
Ruby Booth
Sandia National Laboratories

1:50 pm **W3-H.2**
A Flexible and Scalable Risk Analysis Framework: From Methods to Application
Laura Weinstock
Sandia National Laboratories

2:10 pm **W3-H.3**
Analysis of a Federal Response to Catastrophic Cyber Risk from Cyber Insurance Perspective
Brianna Bace
University at Albany

2:30 pm **W3-H.4**
Risk Formulation for NCFs: Lessons from Financial Risk Measurement and Continuity
Kevin Griffith
Sandia National Labs

3:30 PM – 5:00 PM

W4-A: Roundtable: Taking [some of] the Wicked out of the Cyber Problem

Rock Creek Ballroom

Chair: Debra Decker

The concept of the "wicked problem" was introduced decades ago to characterize the complexity of applying science to policy, with different stakeholder valuations, complex causes, changing definitions of causation and success – to name a few issues.

Cybersecurity is indeed a wicked problem. It has been primarily viewed a problem that users of information and communications technology (ICT) have to manage through having stronger security and more resiliency to reduce consequences of inevitable incidents. Few have been dealing with the nature of insecurities inherent in cyberspace and the threat itself. Some insecure aspects of ICT appear to be changing as demands increase for ICT firms to provide "security by design" and to be accountable, to some extent, for their products/services' security. Thus, vulnerabilities are just starting to be better assessed/managed. However, less attention has been paid to the underlying issue of malicious actors and how to affect their capacity, capability and intent. This roundtable will consider how cybersecurity can become less of a wicked problem.

Other areas of international risk have been considered wicked problems but have been managed by the international community. The Stimson Center, a nonpartisan DC-based think tank working on international security issues, has undertaken a project to look at some other areas of international risk – from chlorofluorocarbons to dual-use materials – to consider lessons (including decision processes) that could be translated to better managing cyberspace, with a focus on accountability. One of the lessons emerging is the importance of detailed risk assessments with stakeholder input and valuations, something cyberspace has generally lacked.

Panelists

- Rosa Celorio
- Christopher Ford
- Fabio Massacci
- Unal Tatar

3:30 PM – 5:00 PM

W4-B: Roundtable: Overview of Proposed SRA Bylaws Changes and Q&A

River Birch A

Chair: Robyn Wilson

This is a placeholder for a session where we can provide an overview of the proposed bylaw changes and have time for feedback and discussion. Namely we will discuss the shift from an Executive Committee and Council to a Board and Advisory Council, the restructuring of committees, and other minor shifts in our governance structure. The theme, SG, and topic selections are not relevant – but perhaps this is about disaster preparedness, foundational issues in risk anlaysis and stakeholder engagement.

Panelists

- Seth Guikema
- Terje Aven
- Katherine McComas
- Henry Willis
- Jim Lambert

3:30 PM – 5:00 PM

W4-C: Roundtable: New Developments in Economic Impact Assessments of Risk Reducing Policies

River Birch B

Chair: Elizabeth Quin

Regulatory impact assessments of risk reducing regulations are required by several Executive Orders. These analyses include cost-benefit analysis and assessments of other impacts. Guidance and oversight are provided by the U.S. Office of Management and Budget (OMB), which is part of the Executive Office of the President. OMB's Circular A-4 provides guidelines to Federal agencies on the development of regulatory analysis and accounting statements. These requirements have been established over the last several decades. The current administration issued a new Executive Order 14094 "Modernizing Regulatory Review", which reinforces the basic principles of previous executive orders and directs OMB to issue revisions to Circular A-4 by April 6, 2024. Earlier this year OMB published the much-anticipated proposed revisions to Circular A-4 and requested public comment. The proposed revisions raise several interesting benefit-cost analysis issues, including appropriate discount rates and distributional impacts of regulations.

This roundtable will bring together experts from academia and U.S. Federal agencies to discuss the proposed revisions and potential changes to current regulatory analysis practices. This group consists of established and well-respected professionals with a long history of conducting economic analyses of risk regulations, including contributors to development of HHS, EPA, DOT, and OMB guidelines for regulatory impact assessments.

Updating and finalizing Circular A-4 is one of the top priorities of the administration and may impact policies for years to come as well as the framework for conducting regulatory impact assessments of these policies. Discussions resulting from this roundtable will contribute to shaping practices related to economic analysis of regulations that reduce health, safety, and security risks.

Panelists

- Lisa Robinson
- Jonathan Wiener
- Deborah Aiken
- Chris Dockins
- Aaron Kearsley
- Linda Abbott

3:30 PM – 5:00 PM

W4-D: Symposium: Wildland Fire – Managing Risk and Impacts

Meeting Room 2

Chair: Alison Cullen

3:30 pm **W4-D.1**

Case Studies and Validation of WISE Simulation Platform for Wildfire Evacuation Planning and Risk Management

Ali Mosleh

University of California, Los Angeles

3:45 pm **W4-D.2**

Assessing the Impact of Development in the Wildland-Urban Interface on Projected Wildfire Risk

Reed Humphrey, Lee Kessenich, Alison Cullen

University of Washington, National Center for Atmospheric Research

4:00 pm **W4-D.3**

Presentation Title: Science-Based Modification of the Atmospheric River Scale for Wildfire Impacted Regions

Emily Wells

US Army Corps of Engineers

4:15 pm **W4-D.4**

Quantifying the Impact of the Prescribed Burning on Mitigating Wildland Fire Risk

Jun Zhuang

University at Buffalo

4:30 pm **W4-D.5**

Characterizing Ignitions Which Evolve into Resource Intensive Wildfires in the Western US

Alison Cullen, Brian Goldgeier, Erin Belval

University of Washington, USDA Forest Service

3:30 PM – 5:00 PM

W4-E: Risk Visualization, Perception, and Communication

Meeting Room 3

Chair: Fernando Ferrante

3:30 pm **W4-E.1**
The Dynamics of Fear: Exploring Logarithmic Changes in COVID-19 Risk Perception over Time in South Korea
Ji-Bum Chung, Min-Kyu Kim, BoEun Lee
Ulsan National Institute of Science and Technology

3:45 pm **W4-E.2**
Governance during Uncertainty: The role of governors and federalism in US disaster response during the COVID-19 pandemic
Kasia Klasa
University of Michigan

4:00 pm **W4-E.3**
Proposal for a Single Index (CIRIX) for Quantifying Resilience of Critical Infrastructures/ Entities Against Extreme Threats
Aleksandar Jovanovic, Helene Schernberg
Steinbeis EU-VRi, ETHZ Risk Center

4:15 pm **W4-E.4**
Public transportation network vulnerability assessment considering both overall and equity aspects
Behnam Tahmasbi, Saeed Saleh Namadi, Asal Mehdi Tabrizi
University of Maryland

4:30 pm **W4-E.5**
Exploring Risk Visualization and Communication Tools for Nuclear Reactors
Fernando Ferrante, Mark Wishart, Andrew Miller
Electric Power Research Institute, Jensen Hughes

3:30 PM – 5:00 PM

W4-F: Symposium: Safety assessment of cultured meat and seafood products

Meeting Room 4

Chair: Kimberly Ong

3:30 pm **W4-F.1**
Safety assessment of cultured meat and seafood products: Insights from regulators, industry, and safety experts
Kimberly Ong
Vireo Advisors

3:50 pm **W4-F.2**
Microbial risks in cultured meat and seafood products
Wei Ng
Vireo Advisors

4:10 pm **W4-F.3**
Risk assessment of growth factors and culture media inputs
Kora Kukk, Kimberly Ong, Jo Anne Shatkin
Vireo Advisors

4:30 pm **W4-F.4**
A simulated digestion model to evaluate the safety of bioactive molecules
Christie Sayes
Baylor University

3:30 PM – 5:00 PM

W4-G: Hurricane Research – A Dynamic Risk Science

Meeting Room 5

Chair: Gabrielle Wong-Parodi

3:30 pm **W4-G.1**
Social influence and protective action during rapidly intensifying tropical cyclones
Gabrielle Wong-Parodi, Natalie Herbert, Andrea Schumacher, Hugh Walpole, Rebecca Morss, Julie Demuth
Stanford University, Cooperative Institute for Research in the Atmosphere (CIRA) at Colorado State University (CSU), National Center for Atmospheric Research

3:45 pm **W4-G.2**
Changing risk perceptions as hurricanes approach landfall: longitudinal panel data for 3 hurricanes
Julie Demuth, Andrea Schumacher, Rebecca Morss, Gabrielle Wong-Parodi, Natalie Herbert, Hugh Walpole
National Center for Atmospheric Research, Cooperative Institute for Research in the Atmosphere (CIRA) at Colorado State University (CSU), Stanford University

4:00 pm **W4-G.3**
Subjective attribution, risk perceptions, and adaptation and environmental behaviors
Gabrielle Wong-Parodi, Dan Relihan, Dana Rose Garfin
Stanford University, University of California Irvine, UCLA

4:15 pm **W4-G.4**
"I don't trust you so I am staying put:" media dependencies surrounding Hurricane Ian and their impact on risk perception, mitigation, evacuation, and trust of emergency responders.
Ken Lachlan, James DiCairano, Christine Gilbert, Patric Spence
University of Connecticut, SUNY- Stony Brook, University of Central Florida

4:30 pm **W4-G.5**
Efficacy and real-time behavior during hurricanes: Evidence from three case studies, 2020-2022
Natalie Herbert, Julie Demuth, Rebecca Morss, Andrea Schumacher, Hugh Walpole, Gabrielle Wong-Parodi
Stanford University, NCAR, Cooperative Institute for Research in the Atmosphere (CIRA) at Colorado State University (CSU), National Center for Atmospheric Research

3:30 PM – 5:00 PM

W4-H: Roundtable: DARPA Resilient Supply-and-Demand Networks Program

Meeting Room 16

Chair: Mark Flood

Military and Civilian infrastructure as well as manufacturing and trade have been adversely impacted disrupted by recent shocks and stresses associated with global change, conflicts and supply chain breakdowns. The Department of Defense (DoD) has a critical need to secure its sources of materiel against both intentional—including adversarial—and unintentional disruptions. DARPA has initiated Resilient Supply-and-Demand Networks (RSDN) program to address strategic challenges of supply chain networks. The program views SDNs as open, complex, evolving systems whose dynamics reflect the impact of both external factors (e.g., conflict, climate change) and internal behaviors (e.g., inventory management). These factors are often driven by the locally focused decisions of SDN participants themselves. SDN resilience is a characteristic of the SDN system as a whole. Resilience enhancements, therefore, require coordinated action among SDN participants, who may individually lack the incentive and discretion to undertake this complex process. This session will present the program and its progress to developing set of tools capable of assessing SDN risk and resilience and conducting stress testing to decide on implementing resilience-by-design and resilience-by-intervention in complex networks.

Panelists

- Igor Linkov
- Andres Gonzalez
- Adam Rose
- Kevin Kiernan
- Heather Pastolic

3:30 PM – 5:00 PM

W4-J: Roundtable: Prospects from the MENA region, why we need an SRA Chapter & what it may bring

Potomac Ballroom Salon I

Chair: Frederic Bouder

Lessons from selected cooperation projects with MENA countries

Ben Trump

Use of Risk Analysis to Inform Evidence-Based Environment and Health Policymaking in Abu Dhabi

Jacqueline MacDonald Gibson
North Carolina State University

The Main institutional risks threatening the MENA region

Nouh El Harmouzi
Arab Center for Research

Presentation title: Establishing a new chapter in the Mena region

Frederic Bouder
University of Stavanger

3:30 PM – 5:00 PM

W4-K: Symposium: Methods for Evaluating the Efficacy of Risk Management Strategies in Incident Response and Disaster Mitigation Scenarios

Potomac Ballroom Salon II

Chair: Joost Santos

3:30 pm **W4-K.1**

Drought Impact Mitigation and Policy Analysis

Joost Santos
George Washington University

3:50 pm **W4-K.2**

Enhanced Transportation Mobility using AI Technologies and Intelligent Transportation Systems

Shital Thekdi
University of Richmond

4:10 pm **W4-K.3**

DiSenDa: Disease Surveillance with Multi-Modal Sensor Network and Data Analytics

Sheree Pagsuyoin
UMass Lowell

4:30 pm **W4-K.4**

Locating Emergency Response Facilities in the Metrorail System: a Decision Support Tool

Ellizabeth Ottinger
George Washington University

3:30 PM – 5:00 PM

W4-L: Risk, Governance, and Accidents

Potomac Ballroom Salon III

Chair: Robin Dillon-Merrill

3:30 pm **W4-L.1**

Existential risks: Climate change, artificial intelligence and the apocalypse

David Berube
NCSU

3:50 pm **W4-L.2**

Voluntary ESG disclosures: an evolving economic risk for greenwashing conduct

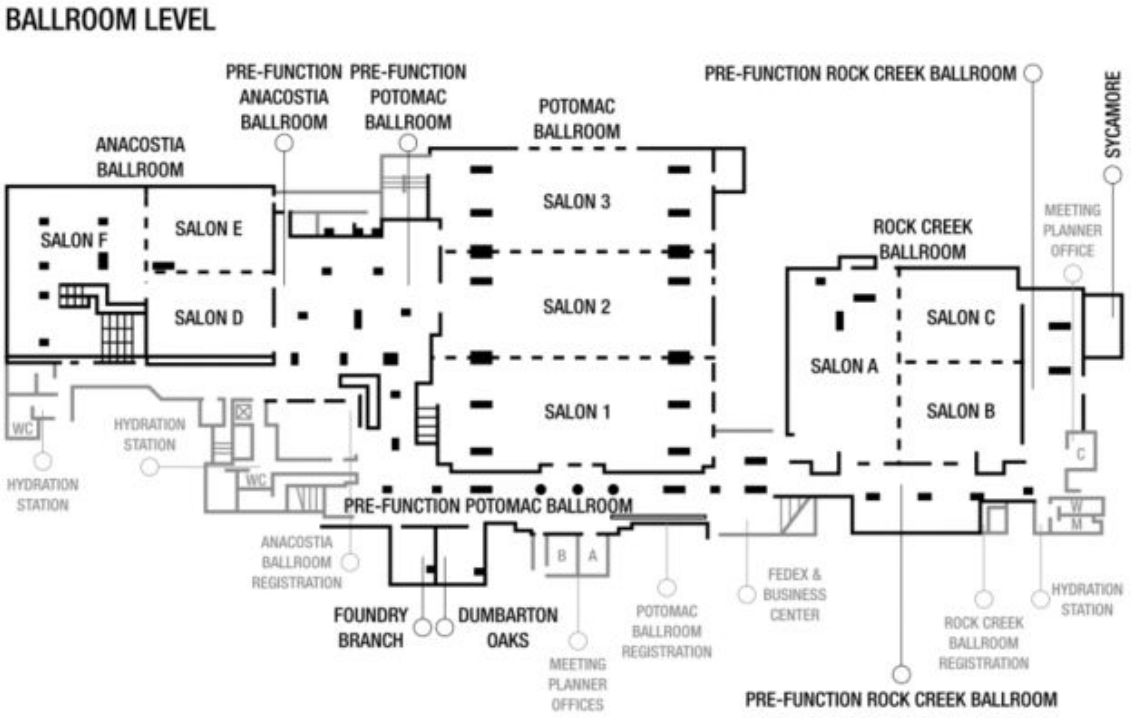
*Neal Brody, Robin Cantor**
Berkeley Research Group LLC

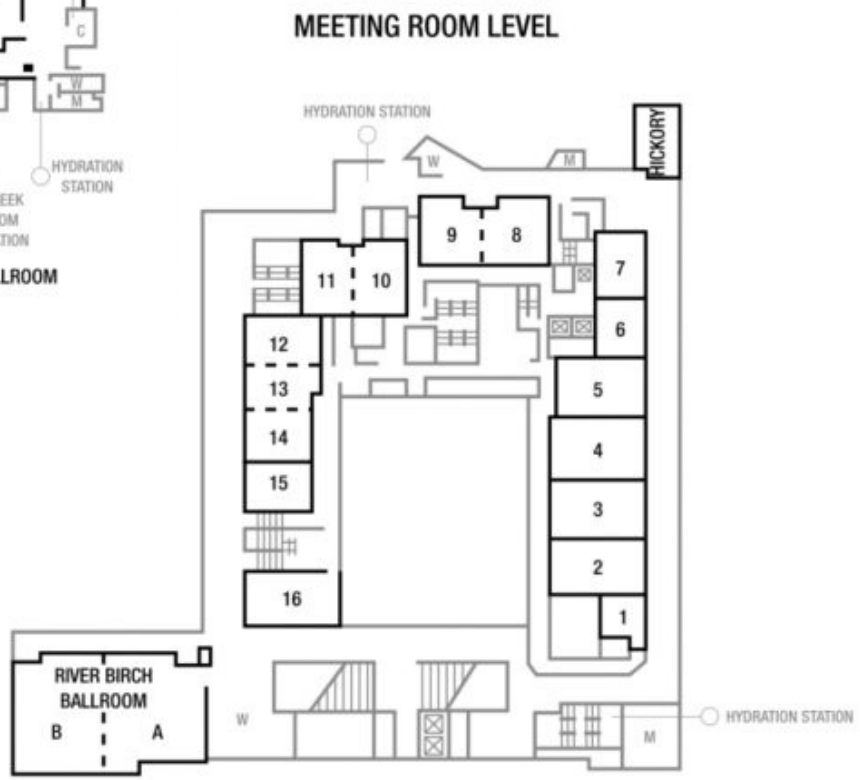
4:10 pm **W4-L.3**

The Relationship between Freight Train Length and the Risk of Derailment

Robin Dillon-Merrill, Peter Madsen, Kostas Triantis
Georgetown University, BYU, Virginia Tech

Westin Washington DC Floor Plans





Author Index

M

N

O

P

Q

R