



Risk Prisms

Society for Risk Analysis - Australia and New Zealand (SRA-ANZ)

2018 Annual Conference

ABS 1050 Abercrombie Building

The University of Sydney Business School

Sydney, Australia

26-27 September 2018

In the field of optics, a prism is a transparent object with at least two angled sides that break up white light into its constituent colours¹. In the same way that a single beam of light is in reality made up of different colours, the **systems-based approach to risk analysis** proposes that risk is likewise composed of different elements^{2,3}.

While the rapid growth of risk research, risk analysis and risk management across multiple fields over the past few decades has successfully produced a large and rich body of literature and practice, it has also resulted in diverse but disconnected perspectives on risk⁴⁻⁶. This is because different disciplines have undertaken independent investigations into the nature of risk and its measurement. While discipline-specific lenses are certainly important in obtaining a deep understanding of risk, this is like passing a beam of light through individual panes of glass: that is, passing light through a single pane of glass does not refract it into its constituent colours and effectively deprives us of the opportunity to gain rich insights into its multifaceted nature.

The way to creatively and insightfully extend the boundaries of the field is for scholars and practitioners from different disciplines to collaboratively work together to act as a prism for risk. 'Refracting' risk requires at least two different disciplines offering at least two different angles or perspectives of the same risk, offering deep insights into the complexity, interconnectedness and interdependencies of the risk ecosystem.

This year, the Society for Risk Analysis – Australia and New Zealand (SRA-ANZ) brings together multidisciplinary panels of risk scholars and professionals at the University of Sydney Business School. Here's to refracting risk and to together pushing the boundaries of risk research and practice!

1. Miller FA. A postage stamp history of optics. *Applied spectroscopy*, 1992; 46 (1):1-17.

2. Haimes YY. On the complex definition of risk: A systems-based approach. *Risk analysis*, 2009; 29 (12):1647-54.

3. Gnedenko B. *The theory of probability* (translated from the Russian by BD Seckler) Chelsea Publishing Company. New York, 1963.

4. Aven T. The risk concept—historical and recent development trends. *Reliability Engineering & System Safety*, 2012; 99:33-44.

5. Aven T and Zio E. Foundational issues in risk assessment and risk management. *Risk Analysis*, 2014; 34 (7):1164-72.

6. Andretta M. Some considerations on the definition of risk based on concepts of systems theory and probability. *Risk Analysis*, 2014; 34 (7):1184-95.

Conference organiser



Partners



**Sydney
Cybersecurity
Network**



REGISTER HERE

Conference registration

<http://www.sraanzconference.org.nz/register.html>



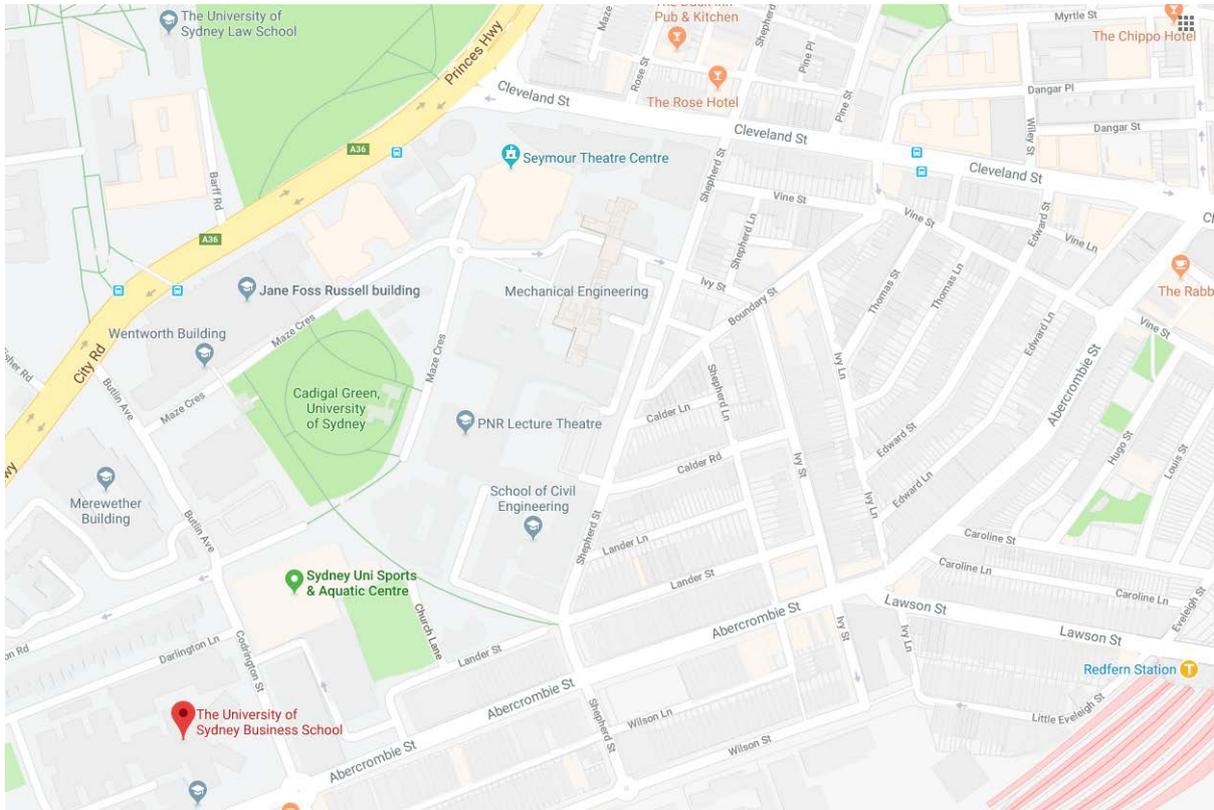
The University of Sydney Business School

Abercrombie Building H70

Corner Abercrombie and Codrington Streets

Darlington, NSW 2006

[Campus map](#)





Train option

Get off at **Redfern Station**



Exit Left at Lawson St
Turn Left at Abercrombie St
Destination corner of Abercrombie and Codrington Sts
 Across the Royal Hotel



Bus option

From the City (or Newtown/ Enmore)
Take buses 422, 423, 426, 428



Get off at **University of Sydney**
 City Road Butlin Ave stop

Walk 100m along City Road to corner
Turn Left at Butlin Ave
Continue along Butlin Ave, which becomes Codrington St
Destination along Codrington St on the right



Taxi option
[Book online](#)

Note: Public parking on campus is very limited and requires payment.



Some nearby hotels



The Urban Newtown

<http://www.theurbannewtown.com.au/>



Mercure Sydney

<http://www.mercuresydney.com.au/>



RYDGES

CAMPERDOWN

Rydges Camperdown Hotel

<https://www.rydges.com/accommodation/sydney-nsw/camperdown/>



Adina Apartment Hotel Sydney Chippendale

<https://www.adinahotels.com/hotel/sydney-chippendale/>

Conference dashboard

Wednesday, 26 September		Thursday, 27 September	
08:00 – 09:00	Registration opens	08:00 – 08:30	Registration opens
09:00 – 09:05	Welcome	08:30 – 09:15	Session 2.1 KEYNOTE: <i>Biosecurity and risk analysis: multiple disciplines or multidisciplinary?</i>
09:05 – 10:00	Session 1.1 KEYNOTE: <i>Risk analysis science: Foundation and challenges</i>	09:15 – 10:45	Session 2.2 <i>The business and economics of biosecurity and the environment</i>
10:00 – 10:15	<i>Morning tea</i>	10:45 – 11:00	<i>Morning tea</i>
10:15 – 11:00	Session 1.2 Risk Management Institution of Australasia (RMIA) Panel: <i>The evolution and revolution of risk management practice</i>	11:00 – 12:30	Session 2.3 Environmental Protection Authority (NZ) Panel: <i>Chemicals, food and the environment</i>
11:00 – 12:30	Session 1.3 Integrated Sustainability Analysis (ISA) Panel: <i>Risk in global supply chains</i>	12:30 – 13:00	<i>Lunch</i>
12:30 – 13:15	<i>Lunch</i>	13:00 – 14:30	Session 2.4 Ecosystem and Forest Sciences Panel: <i>Risk in landscape fire management</i>
13:15 – 14:00	Session 1.4 SRA-ANZ corporate governance research project: <i>Risky business: the ties that bind; the ties that unravel</i>	14:30 – 15:30	Session 2.5 <i>Risk thinking, risk perception and risk governance</i>
14:00 – 15:30	Session 1.5 Sydney Cyber Security Network Panel: <i>Complex issues in cyber security</i>	15:30 – 15:45	<i>Afternoon tea</i>
15:30 – 15:45	<i>Afternoon tea</i>	15:45 – 17:15	Session 2.6 Quality Food Panel: <i>Working with stakeholders for food safety in supply chains</i>
15:45 – 17:00	Session 1.6 People's Public Security University Panel: <i>Geography, crime and terrorism</i>	17:15 – 17:45	Session 2.7 Expanding the frontiers of risk research: <i>Editorial perspectives and the Best Student Paper Award</i>
17:00 – 18:30	Conference reception and Journal of Risk Research SRA-ANZ Special Issue launch	17:45 – 18:45	SRA-ANZ Annual General Meeting

Conference reception and special issue launch

All participants are invited to the
**CONFERENCE RECEPTION AND
JOURNAL OF RISK RESEARCH SRA-ANZ SPECIAL ISSUE LAUNCH**

**Wednesday, 26 September
Lounge outside ABS 1050**

SRA-ANZ is pleased to launch its inaugural special issue in the Journal of Risk Research on ***Bringing People (Back) into Risk Analysis***. The special journal issue features scholarly contributions from SRA-ANZ members, with Dr Sandra Seno-Alday as Guest Editor.



Wong, Catherine Mei Ling, and Stewart Lockie. 2018. *Sociology, Risk and the Environment: A Material-Semiotic Approach*

Corin, Steve E., and Asela Atapattu. 2018. *A Case Study Demonstrates a Democratic Methodology for Making Risk Based Decisions*

Kramnaimuang King, Dolruedee, and Jan Hayes. 2018. *The Effects of Power Relationships: Knowledge, Practice and a New Form of Regulatory Capture*

Ward, Paul, Katie Attwell, Philippa Rokkas, Samantha B. Meyer, and Julie Leask. 2018. *Risk, Responsibility and Negative Responses: A Qualitative Study of Parental Trust in Childhood Vaccinations*

Hayes, Jan, Sarah Maslen, Christina Scott-Young, and Janice Wong. 2018. *The Rise of Defensive Engineering: How Personal Liability Concerns Impact Decision Making*

Hanea, Anca M., Gabriela Florentina Nane, Roger M. Cooke, and Bruce A. Wielicki. 2018. *Bayesian Networks for Identifying Incorrect Probabilistic Intuitions in a Climate Trend Uncertainty Quantification Context*

Session abstracts

Wednesday, 26 September 2018

Session 1.1 | KEYNOTE

Risk analysis science: foundation and challenges

Terje Aven, PhD

Professor in Risk Analysis and Risk Management
University of Stavanger (Norway)

Principal Researcher
International Research Institute of Stavanger (IRIS)

President
Society for Risk Analysis (SRA)

This keynote addresses some fundamental issues related to risk analysis as a field and science: is risk analysis a science in itself or just a set of approaches and methods for supporting knowledge generation to solve real life problems – such as those related to technology, health, security or climate change? Aven argues that risk analysis is indeed a science per se, although it is not yet broadly acknowledged as such. In the talk Aven will outline the main pillars of this science and discuss why the topic is important for the further development of risk analysis. Examples of issues addressed include: the risk concept, risk characterisations, uncertainties, risk management strategies, robustness and resilience-based approaches, and risk governance.

Session 1.2 | RISK MANAGEMENT INSTITUTION OF AUSTRALASIA (RMIA) PANEL

The evolution and revolution of risk management practice

Chair: Scott Ryrie

President
Risk Management Institution of Australasia (RMIA)

Risk professionals representing a wide range of industries operating in the region discuss how risk management practice has changed over the years. They explore the changing nature of risk management practice, the current dynamic challenges that risk managers face on the ground, and the need for new tools and approaches to risk analysis and mitigation in the face of the changing nature of risk. This is an unparalleled opportunity for risk practitioners and scholars to engage in an in-depth discussion on potential areas of collaboration to better understand and manage risk in an era of revolutionary change.

Session 1.3 | INTEGRATED SUSTAINABILITY ANALYSIS (ISA) PANEL

Risk in global supply chains

Chair: Dr Joy Murray

Integrated Sustainability Analysis Group
University of Sydney

Input-output analysis (IOA) is an accounting procedure that documents the flow of money from one stakeholder to another throughout an economy. Following the flow means following expenditure as raw materials and means of production are transformed through numerous intermediary stages, finally to become embedded in goods and services destined to satisfy consumer demand. IOA can be applied to a household budget, the world economy, or anything in between. Since its invention by Nobel Prize winner Wassily Leontief in the 1930s this powerful technique has been extended to include the flow of environmental and social effects of trade. Often referred to as Footprints, the value of these environmental and social studies is only now being realised as early warning risk and opportunity analyses.

This multidisciplinary panel brings together researchers and practitioner from diverse backgrounds to discuss the power and practice of IOA. Hannah-Jayne Shilling discusses the mapping of slavery in global supply chains; Arunima Malik illustrates the use of IOA in disaster analysis with *Tropical Cyclone Debbie* as case study; Rachel Reyes tackles a different kind of disaster – the collapse of the pollinator population and its ramifications for economic risk. We end with applications of IOA as Fabian Sack discusses its employment by government and commercial organisations to inform strategic decision making, the Australian water industry's ten years of use, and the emerging use by major lenders to stress test their portfolio exposure to climate change.

Dr Joy Murray *Analysis of social, economic and environmental impacts of trade using input-output analysis as a risk analysis tool – a potted history*
University of Sydney

Hannah-Jayne Shilling *Risk and the hidden impact of slavery in supply chains, exposed*
University of New South Wales

Dr Arunima Malik *Economic impacts of Cyclone Debbie*
University of Sydney

Rachel Reyes *Where have all the pollinators gone? Population collapse with major economic consequences*
University of Sydney

Dr Fabian Sack *Applying this approach to risk and opportunity analysis in business and industry*
Director, Sustainability Pty Ltd

Session 1.4 | SRA-ANZ CORPORATE GOVERNANCE RESEARCH PROJECT

Risky business: the ties that bind; the ties that unravel

Dr Sandra Seno-Alday

Discipline of International Business
University of Sydney Business School

President

Society for Risk Analysis – Australia and New Zealand (SRA-ANZ)

Strong and robust connections to suppliers, partners, investors and customers are critical to business success. However, are strong connections always good? This study explores the nature and structure of corporate governance networks (i.e., board interlocks) among major corporations in Australia, and investigates implications on the riskiness of these relationship networks to the Australian economy. Considering the significant accountability of the largest corporations in the country for a sizeable portion of the nation's financial capital, the assurance of responsible corporate governance is paramount. The study explores the extent to which the Australian economy may be vulnerable to possible future economic and financial crises given the structure of these corporate governance ties: that is, are these the ties that bind the economy to make it stronger, or are these the ties that can potentially cause parts of the economic infrastructure to unravel?

Session 1.5 | SYDNEY CYBER SECURITY NETWORK PANEL

Complex issues in cyber security

Technological development has brought about significant and rapid advancements in the power and sophistication of technological platforms, infrastructure and applications. At the same time, it has also given rise to unexpected behaviour among users, developers, other actors (such as policymakers), and even the technology itself (given the advent of machine learning). This introduces tremendous complexity in the cyber technology ecosystem, and considerably increases risk and uncertainty. As a relatively young area of risk (barely 30 years old), panellists explore the complex issues in cyber security risk management, highlighting the known knowns, the known unknowns, and raising questions on the possible unknown unknowns of risk in the field.

Peter Coroneos *Understanding the role of human behaviour in cyber risk management*

Regional Head, Asia Pacific CyAN

Cybersecurity Advisors Network and co-author of The Cyber Breach Communication Playbook > cyberbreachplaybook.com

TBC

Data61

Session 1.6 | PEOPLE'S PUBLIC SECURITY UNIVERSITY PANEL

Geography, crime and terrorism

The panel features a series of studies that draw on a range of risk analysis tools to analyse the Global Terrorism Database to predict crime and terrorist attacks on urban areas. Studies analyse the nature of attacks, the parties behind them, timings, and geographic locations to gain insights into terroristic activity across the world over a 40-year period. Implications for urban terrorism risk analysis and prediction are explored.

Yijia Li

People's Public Security University of China

Lingfeng Qiu

People's Public Security University of China

Zeng Tang

People's Public Security University of China

Chaohui Zheng

People's Public Security University of China

CONFERENCE RECEPTION AND SRA-ANZ SPECIAL ISSUE LAUNCH

(Journal of Risk Research)

Lounge outside ABS 1050

Bringing People (Back) into Risk Analysis

Dr Sandra Seno-Alday (Guest Editor)

"If only it weren't for the people, the goddamned people...always getting tangled up in the machinery. If it weren't for them, earth would be an engineer's paradise."

Player Piano
(Vonnegut 1952)

People are at the core of scientific efforts to understand and mitigate risk. However, a quick scan of the risk literature shows that people are not just passive maleficiaries of risk but are also active participants in its inception. People are actors whose biases and behaviors give rise to risk and make an impact on both the degree of its likelihood and the severity of its consequences. Because people themselves undertake risk analysis (either as experts and/or stakeholders), the risk analysis process itself is subject to biases and other human factors. Therefore, human factors must be explicitly brought into risk conceptualisation, analysis, and theory development in order to enrich and extend the frontiers of the field. Scholarly contributions by members of the Society for Risk Analysis Australia and New Zealand (SRA-ANZ) investigating the challenges and complexities of incorporating people in risk analysis are introduced in this special issue.

Session 2.1 | KEYNOTE

Biosecurity and risk analysis: multiple disciplines or multidisciplinary?

Andrew Robinson, PhD

Director

Centre of Excellence for Biosecurity Risk Analysis (CEBRA)

The University of Melbourne

Biosecurity is a largely sociological challenge with biological and economic implications. Recent revelations concerning biosecurity incursions into Australia, combined with the substantial experienced and projected increases in international trade and travel, sharpen our focus on the priorities and challenges of the management of biosecurity risk. The Beale review has told us that comforting historical archetypes of the Australian Quarantine Inspection Service batten down the hatches and protecting the national border against the storms of biosecurity risk are no longer sufficient; biosecurity must work across the continuum of activities. And there have been seismic rearrangements in the biosecurity research landscape. So, what is the work that needs to be done in order to inform the maintenance and development of our pliable yet resilient biosecurity system so that it scales with the future changes that we foresee - and how can it be done - and who will do it?

Session 2.2

The business and economics of biosecurity and the environment

The interdependence and interconnectedness of ecosystems (encompassing environmental, business, economic and social ecosystems) require a systems approach to analysing and mitigating biosecurity and environmental risks. Connectedness that goes beyond the geographic boundaries of cities and countries introduces a further layer of complexity in risk analysis and mitigation in these fields of risk. On the one hand, innovative techniques and significant financial investment are required to analyse and mitigate highly complex biosecurity and environmental risks. On the other hand, short- and medium-term benefits of these efforts may not always be clear-cut. The papers in this panel explore case studies from China and Australia to investigate the business and economics of managing biosecurity and environmental risks.

Xiadong Zhang *A Tale of Two Cities: Green transformation of the textile, printing and dyeing industry in China*
Peking University, China

Huanhong Li *Environmental Risk and Risky Asset Investment: A Case of Chinese Households*
Peking University, China

Yan Wang *An Integrated Assessment of Cumulative Risks in Guangdong Province, China*
Beijing Normal University, China

Dr Aaron Dodd *Estimating the monetary value generated by Australia's biosecurity system*
Centre of Excellence for Biosecurity Risk Analysis (CEBRA)
The University of Melbourne

Dr Paul Mwebaze *Economic feasibility of a systems approaches to access high value markets for horticultural exports from Australia*
The Commonwealth Scientific and Industrial Research Organisation (CSIRO) Land and Water

Session 2.3 | ENVIRONMENTAL PROTECTION AUTHORITY (NEW ZEALAND) PANEL

Chemicals, food and the environment

Chair: Lee Bailey

Senior Advisor

Environmental Protection Authority Te Mana Rauhi Taiao

Chemicals are an important part of modern life. From the soaps and toothpastes that we use in the morning, to those used at work and the manufacture of new products, and those used to manage agricultural pests. These chemicals all have hazards. It is important for the health of people and the environment that the risks from these hazards are managed properly. The panel presents a variety of how New Zealand's regulators look at these risks from a range of perspectives, including importing or manufacturing a substance for the first time, managing chemicals safely at work, and residues on the food we eat. Are there also non-chemical alternatives that could be used?

Michael Berardozi *Importing and manufacturing pesticides*

Team Leader, Hazardous Substances Applications, Environmental Protection Authority Te Mana Rauhi Taiao

Lee Bailey *Legacy pesticides still in New Zealand*

Senior Advisor, Hazardous Substances Reassessments, Environmental Protection Authority Te Mana Rauhi Taiao

Clark Ehlers *Assessing the benefits and risks of releasing exotic organisms to manage invasive species in New Zealand*

Senior Advisor, New Organisms, Environmental Protection Authority Te Mana Rauhi Taiao

Julian Jackson *Cultural risk assessment tool for New Zealand*

Senior Advisor, Kaupapa Kura Taiao, Te Mana Rauhi Taiao

Session 2.4 | ECOSYSTEM AND FOREST SCIENCES PANEL

Risk in landscape fire management

Chair: Associate Professor Trent Penman

Bushfire Behaviour and Management
School of Ecosystem and Forest Sciences
The University of Melbourne

Historically, landscape fire management has strong military links with a command and control mentality. Fires were likened to a war and communities strongly encouraged to band together to face the common enemy. This mentality fostered the expectation that fires were bad and out of control fires were the result of poor management decisions. Little attention was given to the natural role of fire in the landscape. Large wildfires across the world in since 2000 have resulted in significant shifts in the dominant fire management paradigm from command and control to risk management. Understanding fire risk is challenging due to the complexity of the landscape and the diversity of values within each landscape. Environmental, social and cultural values need to be traded off against quantitative and qualitative measures. In this panel, we will bring together risk researchers and landscape fire managers to discuss the history and future of “risk” in fire management.

Professor Ross Bradstock *The history of risk in landscape fire management*
University of Wollongong

Dr Stuart Matthews *Working with fire risk*
NSW Rural Fire Service

Dr Katharine Haynes and Dr Joshua Whittaker *Social dimensions of fire risk*
Macquarie University/University of Wollongong

Associate Professor Geoff Cary *Role of simulation models in assessing fire risk*
Australian National University (ANU)

Associate Professor Trent Penman *A proposed framework for environmental fire risk assessment*
The University of Melbourne

Session 2.5

Risk thinking, risk perception and risk governance

The panel explores the challenges associated with incorporating human, social, organisational and cultural factors in risk analysis, risk evaluation and risk mitigation. Incorporating cognitive biases, cultural worldviews, social influences and organisational tensions certainly makes risk analysis more realistic, but also increases the degree of uncertainty in overall risk governance. Can we trust ourselves to objectively analyse risk? Can recognised experts truly rationally and impartially evaluate risk? And is there such a thing as 'objective' risk analysis and governance, devoid of subjective perceptions, judgements, and agendas? The panel investigates the impact of these human and social factors, and also proposes strategies to manage these factors in risk governance.

Victoria Hemming *Quantile aggregation and performance weighting, does it improve judgement?*

Centre of Excellence for Biosecurity Risk Analysis (CEBRA)
The University of Melbourne

Anna Kosovac *Cultural Theory, Worldviews and the Public Sector: an exploration of risk perceptions*

The University of Melbourne

Marja Ylönen *Decommissioning as a challenge to risk governance - risks and uncertainties in the governance of decommissioning of a nuclear reactor*

Technical Research Centre of Finland, VTT

Session 2.6 | QUALITY FOOD PANEL

Working with stakeholders for food safety in supply chains

Food safety is a paramount concern among regulators, agricultural businesses, and the public. Unmitigated risk in this area can have serious and widespread impacts that go beyond human health, including broad socioeconomic consequences (e.g., strain on healthcare systems, disruptions to business and international trade, contraction in tourism, and others). Efforts to ensure that food is safe for humans does not only occur at the farm or at the point of consumption but must in fact thread through the entire food supply chain. Therefore, the assurance of food safety requires the active involvement and engagement of the wide range of players and stakeholders across increasingly distributed supply chains. These efforts must also include the protection of both animals and plants from disease and pests using methods and products that are ultimately safe for humans and the environment. The panel explores the significant challenges of keeping us and our food safe in Australia.

Walter Okello *Evaluation and optimization of antimicrobial resistance surveillance systems in Australia*

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) Land and Water

Philip Martin *Beyond divergent approaches to AgVet chemical risk assessment regulation: informing Australia's Risk Assessment Adaptation Strategy*

Australian National University

Hayriye Bozkurt Cekmer *Quantitative Microbial Risk Assessment for Escherichia coli:O157:H7 in Lettuce from Farm to Consumption in Australia*

Sydney Institute of Agriculture

The University of Sydney

Hongshan Shang *Development of pre-harvest applications of electrolysed water and other chemical interventions in suppressing foodborne pathogens on leafy green vegetables*

Sydney Institute of Agriculture

The University of Sydney

Ingrid Zamora *Microbial food safety in the distribution of fresh produce in Australia*

Sydney Institute of Agriculture

The University of Sydney

Session 2.7 | EXPANDING THE FRONTIERS OF RISK RESEARCH

Editorial perspectives and the Best Student Paper Award

Deepening and enriching our understanding of the nature of risk and developing corresponding relevant approaches to its analysis and mitigation requires the continued work of scholars across disciplines. Scholars from the various fields of risk must not only break down disciplinary silos to work with each other but must also engage collaboratively with risk professionals at the forefront of managing risk on the ground. Editors from two of the most influential scientific journals in the field share their thoughts on how to creatively and insightfully push the frontiers of risk research towards an increasingly complex future.

The Best Student Paper presented at this year's conference will also be awarded in this session. The recipient of the award will receive partial funding to attend any conference or event of the Society for Risk Analysis (SRA) and its regional organisations anywhere in the world in 2019.

Terje Aven, PhD
Associate Editor
Risk Analysis

From the journal website:

Risk Analysis, published on behalf of the Society for Risk Analysis, is ranked among the top 10 journals in the ISI Journal Citation Reports under the social sciences, mathematical methods category, and provides a focal point for new developments in the field of risk analysis. This international peer-reviewed journal is committed to publishing critical empirical research and commentaries dealing with risk issues. [Read more about this journal.](#)

Dr Frith Jarrad
Managing Editor
Conservation Biology

From the journal website:

Conservation Biology is the most influential and frequently cited journal in its field. The journal publishes groundbreaking papers and is instrumental in defining the key issues contributing to the science and practice of conserving Earth's biological diversity. [Read more about this journal.](#)

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**Thursday, 27 September
ABS 1050**