



Should I Eat That? Food-Safety Risk Analysis

Mary Walchuk

Have you ever awakened feeling terrible and wondering if you caught the latest stomach bug going around, only to find out that something you ate is what made you sick? If you look up food safety on the Internet, one Web site alone lists enough food recalls to make consumers wonder if they should start growing their own food (FDA 2010).

“Food safety is an increasingly important public health issue,” states the World Health Organization. “Governments all over the world are intensifying their efforts to improve food safety. These efforts are in response to an increasing number of food safety problems and rising consumer concerns” (WHO 2007).

It has become such a significant subject that the Society for Risk Analysis (SRA) journal, *Risk Analysis*, has received enough papers on the topic to devote its May 2010 issue entirely to risk assessment of food-related risks.

Charles Haas, the *Risk Analysis* area editor for microbial risk assessment, recently explained how risk analysis plays an important role in food safety worldwide. Haas also described SRA’s involvement in food-related risk analysis.



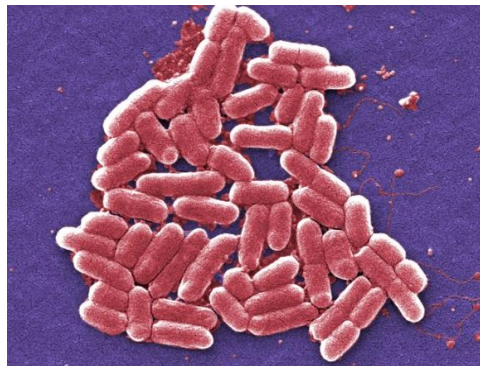
Listeria
Image by Dr. Balasubr Swaminathan and Peggy Hayes, CDC

What are the most common food-related risks worldwide?

Haas: Worldwide, it is definitely severe diarrhea from various foodborne agents, many of which are also transmitted by water and improper sanitation. Agents and diseases of concern include cholera, typhoid, and many enteric bacteria, viruses, and protozoa.

What are the most common food-related risks in the United States?

Haas: They remain infectious diseases, but of different types. There are also several organisms that cause low levels of illness with some high-severity consequences, such as *Escherichia coli* O157:H7 and *Listeria*.



E. coli O157:H7
Image by Janice Haney Carr, CDC

What are the top food-safety topics in risk analysis?

Haas: Dose response and exposure assessment remain important, but increasingly the understanding of behavioral factors during food handling and description of factors in the “farm to fork” chain have been increasing. We are also starting to see defined research on risk communication strategies and their efficacy.

(*Food Safety Risk Analysis*, continued on page 2)

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(*Food Safety Risk Analysis, continued from page 1*)

As food consumption changes, with greater consumption of ready-to-eat, minimally processed, or fresh foods, attention to prevention of risks in these vehicles arises.

I would also add that there is continuing concern with chemical residues in food (for example, from pesticides) and the more careful assessment of these risks, and their control, remains an active topic.

How is risk analysis involved in food-related risks?

Haas: Fundamentally, the same broad risk-assessment paradigms that apply to any environmental or public health agent of concern apply to food. In the food area, there are many aspects where risk can either be very dramatically controlled or amplified by consumer behavior, so understanding these aspects becomes generally more important.

Since 2001, there has been an increasing attention to the vulnerability of the food supplies, and as a result there has been increasing research and publication using a risk analytic approach.

How is the SRA involved in food-related risk analysis?

Haas: There is a very active specialty group in biostressors with a significant focus on different types of food risks. In addition, especially with regard to chemical contaminants, the specialty groups on exposure and dose response also are active in the field. For at least 15 years, there have been many papers at the annual meeting relating to food-safety concerns, and in recent years multiple session tracks have



Image by Suat Eman/FreeDigitalPhotos.net



Image by Julie A. Wenskoski/FreeDigitalPhotos.net

emerged. The paper flow in *Risk Analysis* relating to food risk has also seen a continual increase.

Is food safer today than it was 20 years ago? Why or why not?

Haas: This is hard to answer definitively. Unfortunately, we don't have a strong surveillance program going back that far. There have definitely been advances in practice, such as the HACCP (hazard analysis and critical control points) system widely adopted in the industry, which have led to better food safety. On the other hand, we have gotten better (with advances in molecular biology) at being able to detect and attribute small outbreaks.

Is there a difference between what the general public perceives as food-related risks and what actually are food-related risks?

Haas: Like all areas of risk, there is a difference between what we can estimate via assessment and the level of perception. A key area of risk amplification in food appears to be the type of subpopulation af-

ected—risks that have high potency or consequence in children, for example, are often amplified in perception. However the factors inducing amplification in food risk may not be all that different than in other areas (although this would be an interesting topic to examine in greater detail).

Do you have anything else to say to our readers about food-related risk analysis?

Haas: There is plenty to do and all risk analysts are welcome at the table!

References

Food and Drug Administration. Recalls, market withdrawals, & safety alerts. FDA; 3-18-2010. Available at: www.fda.gov/Safety/Recalls/default.htm. Accessed 19 April 2010.

World Health Organization. Food safety and foodborne illness. Fact Sheet No. 237. WHO; March 2007. Available at: www.who.int/mediacentre/factsheets/fs237/en/index.html. Accessed 19 April 2010.



Created during the 1930s, this historic sign, explaining the benefits of safe food handling, was created by the Minnesota Department of Health. Its message was part of a campaign to promote food safety and to prevent foodborne illness.

CDC/Minnesota Department of Health, R.N. Barr Library; Librarians Melissa Rethlefsen and Marie Jones

Charles Haas



Charles Haas is the Betz Professor of Environmental Engineering and also head of the Department of Civil, Architectural & Environmental Engineering at Drexel University.

Haas has been an academic for his entire career. His early work in risk analysis was in the assessment of infectious disease risks from waterborne exposure, such as in drinking water or in recreational waters. Many of the pathogens in water are also food borne, so in the early 1990s, when there was heightened attention to food infectious disease risks, he broadened his scope of interest.

Haas has done funded research for the International Life Sciences Institute (ILSI) in the food area and has also been involved in workshops or consultations with ILSI, the Food and Agriculture Organization, the World Health Organization, and other national and international groups. He has published articles in different food-related journals on applications of quantitative microbial risk analysis to food safety problems and has also done some expert consulting on various topics related to microbial food safety issues.

Coming in the May Issue of *Risk Analysis*

- Opening Editorial—Sandy Hoffman and Charles Haas
- Probabilistic Inversion in Priority Setting of Emerging Zoonoses—Roger Cooke
- A Multi-Factorial Risk Prioritization Framework for Foodborne Pathogens—Juliana Ruzante, Valerie Davidson, Julie Caswell, Aamir Fazil, John Cranfield, Spencer Henson, Sven Anders, Claudia Schmidt, and Jeffrey Farber
- Risk Ranking for Foodborne Microbial Hazards in New Zealand: Burden of Disease Estimates—Rob Lake, Peter Cressey, Donald Campbell, and Elisabeth Oakley
- Attribution of Human VTEC O157 Infection from Meat Products: A Quantitative Risk Assessment Approach—Rowena Kosmider, Pádraig Nally, Robin Simons, Adam Brouwer, Susan Cheung, Emma Snary, and Marion Wooldridge
- Can a Participatory Approach Contribute to Food Chain Risk Assessment?—Gary Barker, Clare Bayley, Angela Cassidy, Simon French, Andy Hart, Pradeep Malakar, John Maule, Martina Petkov, and Richard Shepherd
- Integrated Approaches for the Public Health Prioritization of Foodborne and Zoonotic Pathogens—Marie-Josée Justine Mangen, Michael Batz, Annemarie Käsbohrer, Tine Hald, J. Glenn Morris Jr., and Michael Taylor
- A Quantitative Assessment of the Risk for Highly Pathogenic Avian Influenza Introduction into Spain via Legal Trade of Live Poultry—Fernando Sánchez-Vizcaíno, Andrés Perez, Manuel Lainez, and José Manuel Sánchez-Vizcaíno
- A Tiered Approach for Risk-Benefit Assessment of Foods—Heidi Fransen, Nynke de Jong, Marieke Hendriksen, Marcel Mengelers, Jacqueline Castenmiller, Jeljer Hoekstra, Rolaf van Leeuwen, and Hans Verhagen
- Statistical Evaluation of the New Zealand Food Safety Authority Sampling Protocol for Imported Food—Raj Govindaraju and Mark Bebbington
- Methylmercury Risks and EPA+DHA Benefits Associated to Seafood Consumption in Europe—Carlos Cardoso, Narcisa Bandarra, Helena Lourenço, Claudia Afonso, and Maria Nunes
- Global Sensitivity Analysis Applied to a Contamination Assessment Model of *Listeria monocytogenes* in Cold Smoked Salmon at Consumption—Mariem Ellouze, Jean-Christophe Augustin, and Jean-Pierre Gauchi
- Evaluation of Scenarios for Reducing Human Salmonellosis through Household Consumption of Fresh Minced Pork Meat—Kaatje Bollaerts, Winy Messens, Marc Aerts, Jeroen Dewulf, Dominiek Maes, Koen Grijspeerdt, and Yves Van der Stede

President's Message

Spring has arrived! Here in the DC area, it is always an exhilarating time as the cherry blossoms bloom and the weather warms. It's particularly pleasant this year after the winter storms we endured.

The highlight of my first quarter as president of the Society for Risk Analysis (SRA) was definitely my trip in January to the first annual meeting of the Taiwan regional organization. My flight landed in Taipei and I was driven about 100 miles southwest to Taichung, the site of the meeting. The meeting was held at the China Medical University in downtown Taichung. I spoke about one of my favorite topics, the evolution of health risk assessment in the United States. In the morning session, I was joined by two other keynote speakers, including Dr. Dong-Chun Shin of Korea, who spoke about the use of risk assessment in Korea, and Dr. Jun Sekizawa, former president of SRA-Japan, who spoke about risk communication in food safety. At the break, we took a group picture, which is below.

The conference was on a Friday and we had a strategic meeting the following morning to discuss the affairs of the Asian chapters. We agreed that Dr. Kuen-Yuh Wu would organize a special-issue proposal for *Risk Analysis* on BSE (bovine spongiform encephalopathy). The perceived risk of BSE in western beef, particularly from the United States, is a significant concern to the Taiwanese people and across Asia. I think it will be interesting for our Asian colleagues to provide a special issue on this topic in the journal, and I hope it will spur more papers from Asia.

After our work was done on Saturday, my hosts took me to a resort called Sun Moon Lake. We visited different Buddhist temples in the area and also visited the former summer home of Chiang Kai-shek, who ruled Taiwan from 1950 to his death in 1975 and is still a controversial figure.



I headed back to Taipei on Sunday night and gave a talk at Taiwan National University the following day on my work on risk assessment associated with soil fumigants. I had a chance to spend some time with some of the faculty at the university and was very impressed at how much they are using risk assessment to help address and solve problems in Taiwan. There was still time for a little more sightseeing that day, including a trip to the Taiwan National Museum and up to the top of Taipei 101, which until recently was the tallest building in the world. Having finally adjusted to the time change and having a good night of sleep, I left the following morning!

I have to thank my gracious hosts at SRA-Taiwan, especially Dr. Chang-Chuan Chan, current president of SRA-Taiwan, and Dr. Wu, past president of SRA-Taiwan. Mr. Chiung-Hsuan Chung Sam, Dr. Wu's research assistant, was a helpful guide for my touring.

Back in the States, I began to tackle one of my major goals for the year. I formed an ad-hoc committee to review the SRA Web site and recommend ideas for improving the content and generally providing a greater service to the membership and a bigger platform to project the Society to the larger world. The committee will meet over the next few months and develop a strategic vision for the Web site that will be discussed at the June Council meeting.

There are a few other things that you should be aware of this time of year. We have sent out invitations for nominations of new councilors and awards. Dr. Kim Thompson is the chair of the Awards Committee and you can contact her with nominations. Likewise, Dr. Jonathan Wiener is the chair of the Nominations Committee for new councilors and officers. This year we will elect three new councilors and a president-elect.



Specialty Group Reports from the Field

**A brief look at what is new and exciting in the risk analysis field,
provided by SRA specialty group chairs and members**

Risk Communication

Louie Rivers

The field of risk communication is at a crossroad. In traditional technocratic risk governance models, which are becoming increasingly anachronistic, risk communication was a tool for scientists and policy makers to communicate their decisions with the public. As risk governance grows to include greater transparency and stakeholder participation, the function and purpose of risk communication is in flux. There is a recognized role for risk communication in the processes of risk assessment, risk evaluation, and risk management. However, there is a danger that as risk communication is subsumed into each of these processes that it may lose its distinct identity as a separate and equal process. This burgeoning identity crisis has provided an opportunity for researchers to refine what risk communication means in a transparent risk-governance framework. Two critical aspects of this refinement are the link between risk communication and behavior and how risk communication is used to address increasing levels of uncertainty related to emerging technologies.

At the heart of risk communication is the development of an understanding of how risk is perceived by the intended audience and using this information to effectively influence behavior. At a basic level, this can take the form of a warning message about an immediate risk, such as the traffic sign signaling upcoming roadwork. However, the true challenge for modern risk communication is to craft messages that will influence behavior in contexts that are fraught with complexity and uncertainty, such as global climate change (this is not to discount the importance and difficulty of risk communication and warning messages in times of immediate threat). A growing body of research is showing that risk communication under these conditions requires not only adequate knowledge of attendant risk perceptions, the technical dimensions of the risk in question, and best practices from the communication literature, but also the consideration of the psychology of human judgment and decision behavior. In other words, successful risk communication is more than pairing the right information with the right delivery system.

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Beyond this essential link between risk communication and behavior, there is a need for risk communication to inform critical discussions surrounding the challenges around emerging technologies given high levels of uncertainties. Whether we are talking about synthetic biology, neurotechnologies, nanotechnologies, nanomedicine, bionano or nanobiotechnologies, biotechnologies, etc., we have brash advocates who hyperbolize the anticipated consequences and under-informed critics, many of whom engage their own tirades on globalization, rich-poor gaps, digital divides, privacy encroachments, etc. We need to find ways to make decisions under moderate levels of uncertainty that secure human and environmental health and safety without foregoing the benefits of development and higher standards of living. Risk communication needs to play a key role in this process.

Engineering and Infrastructure

Ariel Pinto, Joost Santos, Kenneth Crowther, Will McGill, Rapik Saat

Recent notable national and global issues—from economic recession to earthquake, flooding, and record snowfall—have placed risk and engineering and infrastructure in a new vernacular. Natural disasters coupled with economic recessions have underscored the growing importance of engineering and infrastructure research and innovation in the United States. The 2009 American Society of Civil Engineers report cards gave America's infrastructure a grade of D and asserted that a five-year investment of \$2.2 trillion is needed to bring our infrastructure systems to acceptable conditions. As a consequence of such findings, there is undoubtedly a clear and present need for investing more on engineering and infrastructure areas.

A case in point, the American Recovery and Reinvestment Act (ARRA) earmarked approximately \$27 billion for transportation projects. Furthermore, the National Science Foundation's Civil and Mechanical Systems Division has supported a significant array of grants on structural engineering (particularly on bridge reliability), materials engineering, geotechnical engineering, and bio-inspired structures, among others.

Another emerging national agenda is regarding how infrastructure relates to climate change and the eco-system as a whole. While the science behind this emerging issue is still being evaluated, there are opportunities for risk analysts and engineers to systematically evaluate any possible relationships to present infrastructure by identifying dominated threats or hazards and prioritizing resource allocations for future research and studies.

All of the above are bringing the risk analysts out of everyone in the field of engineering and infrastructure, not just in the United States, but globally. This year, the importance of infrastructure research and innovation in the United States became apparent. Also this year, researchers and practitioners all over the world will meet in China to discuss not just the current but the next generation infrastructure, particularly on those needed to build eco-cities. These engineers will contemplate how such sustainable cities will be designed from next generation infrastructure—those that rely minimally on the surrounding areas, use renewable sources of energy, produce minimal pollution, use recycled materials, and convert waste to energy—thus, cities with the smallest possible ecological footprints.

When will we all get to live in these eco-cities? No one really knows when, but maybe sooner than most people would think. Nonetheless, now is the ideal time to think about and try to anticipate risks these next generation infrastructures may bring. Titles of recent article submissions to the Society for Risk Analysis in the area of engineering and infrastructure have shown notable themes such as safety, modeling, and the role of experts in analyzing risks. It is expected that these themes will evolve and move toward the general trend of risk, engineering, and the next generation infrastructure.

As risks are ubiquitous to our current and any foreseeable next generation infrastructure systems, the Engineering and Infrastructure Specialty Group and other specialty groups of the Society for Risk Analysis are poised to provide an important role on policymaking and disseminating research outcomes to make future infrastructure systems safer.

Economics and Benefits Analysis **www.sra.org/ebasg**

Lisa A. Robinson

As the Obama Administration moves into its second year, the Economics and Benefits Analysis Specialty Group (EBASG) continues to watch with great interest how it is addressing environmental, health, and safety risks. The pace of regulation has clearly increased. In addition, with the confirmation of Cass Sunstein as the administrator of

the Office of Information and Regulatory Affairs in the U.S. Office of Management and Budget (OMB), the Administration continues to emphasize behavioral approaches and the use of benefit-cost analysis. Most recently, both OMB's 2009 report on the benefits and costs of federal regulations and the President's fiscal year 2011 budget proposal discussed related issues. (Links to both documents are available on the EBASG Web site—www.sra.org/ebasg.)

OMB's 2009 Report to Congress on the Benefits and Costs of Federal Regulations discusses recommendations for reform in three areas: considering behavioral approaches to regulation, improving regulatory impact analyses, and using these analyses to promote open government. OMB notes that social scientists have found that individuals depart from the assumptions that underlie economic theory in several respects, for example, by using mental shortcuts, failing to act out of inertia, displaying more aversion to losses than to gains, and making judgments based on emotions. OMB suggests four particularly promising behaviorally informed approaches to regulation: "... 1) using [information] disclosure as a regulatory tool; 2) simplifying choices through sensible default rules and reduced complexity; 3) increasing the salience of certain factors or variables; and 4) promoting desirable social norms ..."

To improve analyses of significant regulations, OMB recommends that agencies (1) present both benefits and costs in clear, tabular form, including nonquantifiable factors, (2) conduct more retrospective analyses of regulatory impacts, (3) consider effects on future generations and the least well off, and (4) continue efforts to address related challenges, including the treatment of factors that cannot be easily quantified or monetized. To promote open government, OMB indicates that benefit-cost analysis provides "... a public accounting of the consequences of alternative regulatory approaches [that] can increase transparency and openness, discourage ill-considered initiatives, and promote valuable innovations."

The Analytical Perspectives volume that accompanies the President's budget also provides a detailed discussion of the use of benefit-cost analysis, including a summary of the information in the 2009 Report to Congress. It notes that such analyses provide a systematic accounting framework to support continual improvement of the government's performance. As an example, it discusses the wide variation in the costs per life saved across selected rules, which suggests that more work is needed to ensure that resources are allocated as effectively as possible. In addition, it observes that benefit-cost analysis is increasingly used for federal budgetary programs as well as for regulations, supporting

... benefit-cost analysis is increasingly used for federal budgetary programs as well as for regulations, supporting both prospective and retrospective evaluation of proposed or existing programs.

both prospective and retrospective evaluation of proposed or existing programs.

We will continue tracking related initiatives and posting materials on our Web site. We hope that you will comment on these issues and provide information on other topics of interest by joining our discussion group, which can be accessed through the side menu on the EBASG Web site.

Emerging Nanoscale Materials

Barbara Herr Harthorn

On 29-30 January 2010, the Center for Nanotechnology in Society at the University of California at Santa Barbara (CNS-UCSB) hosted a specialist meeting on nanotechnology risk perception with the support of the U.S. National Science Foundation. The questions the group sought to address included identifying gaps in current understanding (empirical, theoretical), the surprises in what we've learned so far, how new research should proceed in the field and what directions it should take, and how the upstream nanotech case suggests revision or rethinking about SARF (the social amplification of risk framework).

The group was convened by CNS-UCSB Director Barbara Herr Harthorn and her CNS collaborators, Nick Pidgeon (Cardiff University) and Terre Satterfield (University of British Columbia), and included leading risk perception researchers (and SRA members) from the United States, Canada, the United Kingdom, Germany, Switzerland, and Portugal.

Paul Slovic contributed a reflective overview at the conclusion on "The Problem of Early Stage Risk Perception."

Participants contributed white papers on new work in progress, and the conference conveners are preparing a collection of papers for publication.

More specific empirical and theoretical topics of interest to the conveners included nanotechnologies as perturbing elements in conventional thought and practice about how we think about risk perception and governance; issues posed by emergent technologies for understanding amplification and attenuation of risk; cross-national differences in risk perception; application specificity of nanotech risk perceptions; novel methodological approaches to the study of emergent risk; "real risk" and perceived risk in the nanotech context; current views on if and how "education" or deeper forms of deliberation shape risk perception; mental models and risk communication; politics of nanotech risk, risk perception, and regulation; constructed preference; gender, race, and other social locations and differ-

ences as factors in risk perception; affect and risk perception; media and risk communication; and cultural values as drivers or shapers of perception.

Dose Response

Lynn Haber

2010 Alliance Workshops to Discuss the Future of Dose Response

As part of an initiative to continue and broaden the discussion set forth by the National Academy of Science's (NAS) 2008 "Science and Decisions: Advancing Risk Assessment," the Texas Commission on Environmental Quality (TCEQ) held the first of three workshops 16-18 March 2010 under the auspices of the Alliance for Risk Assessment (ARA) (<http://www.allianceforrisk.org>). The workshop series is currently sponsored by 25 organizations, including the Society for Risk Analysis (SRA) and SRA's Dose Response Specialty Group (DRSG). Its goal is to build

Participants contributed white papers on new work in progress, and the conference conveners are preparing a collection of papers for publication.

consensus among participants on a guidance document on key considerations and purpose-focused dose-response methods for various problem formulations. Workshop participants included over 60 in-person attendees and more than 100 participants via Webcast, including representation from federal, state, industry, nongovernmental organization, academia, and research institutes. Thought leaders from a variety of sectors presented their work and ideas and offered perspectives on the NAS report. Presentations from the meeting are available at www.allianceforrisk.org/workshop/materials.htm and can be watched at www.texasadmin.com/cgi-bin/amtnrcc.cgi. A summary of the breakout group discussions will be available by early May.

Meeting participants proposed and reviewed proposals for a number of case studies to illustrate and evaluate dose-response methods.

Meeting participants proposed and reviewed proposals for a number of case studies to illustrate and evaluate dose-response methods. The case studies will be evaluated at the second workshop by an expert panel that will include biologists, mathematicians, and risk assessors from a variety of affiliations and will be selected by the ARA Steering Committee, with the objective of developing a consensus document at the third workshop. Teams for case studies are currently being organized, and participation is open to all.

A list of the case studies that the workshop participants recommended for further development and for review at the second workshop is posted at www.allianceforrisk.org/workshop/selections.htm.

Although chemicals are named, the focus is on the principles of methodology illustrated by the case. Topics covered include:

- Consideration of the impact of inter-individual variability in cancer susceptibility.
- Evaluation of a data-rich chemical using approaches of increasing sophistication, and data intensity, from default through biologically based dose response, including sensitivity analyses to address relative uncertainty.
- Consideration of background and endogenous processes.
- Methods for screening-level assessments.
- Determining the risk consequences of intermittent exceedances of short-term exposure screening levels.
- A variety of methods for calculating risk at exposures exceeding or in the range of the RfD/RfC, including probabilistic uncertainty factor distributions, linear extrapolation, linked cause-effect functions for key events, categorical regression, and extension of benchmark dose method modeling curves.
- Acute exposure limits of varying severity using the AEGL (acute exposure guideline level) methodology.
- Applying mode of action information with PBPK (physiologically based pharmacokinetic) and biologically based dose response modeling to quantify cancer risk, including consideration of endogenous/background exposure and background processes, as well as uncertainty, variability, and alternative modeling approaches.
- Decision tree/framework on criteria for using increasingly data-informed approaches.
- Review of data fusion methodologies to integrate data from different organizational levels.
- Incorporation of data on inter- and intra-species variability in kinetics for noncancer endpoints.
- Dose response for liver tumors in rats involving three nuclear receptors (AHR, CAR/PXR, and PPAR α).

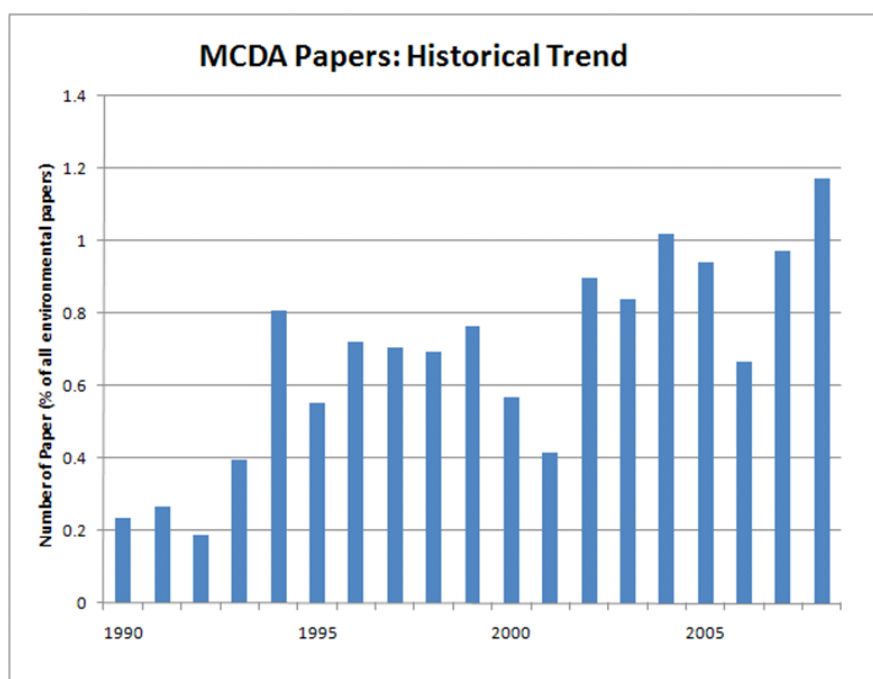
For more information or to submit case studies contact Lynne Haber at Haber@tera.org.

Decision Analysis and Risk

Laure Canis, Ivy Huang, and Igor Linkov

In response to current decision-making challenges, regulatory agencies and managers continue to move toward more integrative decision-analytic processes, such as multicriteria decision analysis (MCDA). MCDA methods are designed to raise awareness of the trade-offs that must be made among competing project objectives, help compare alternatives that are dramatically different in their potential impacts or outcomes, and synthesize a wide variety of information.

The figure here presents results of our nonexhaustive review of the recent literature on environmental applications



of MCDA. It plots the ratio of papers that use specific MCDA tools (including multiattribute utility theory [MAUT], analytical hierarchy process [AHP], outranking) to all papers classified under “Environmental Science” subject area in the ISI Web of Science database. A total of about 500 MCDA papers were identified out of some 63,000 environmental science papers. The results show a clear increase in the number of publications over time.

MCDA techniques

have been applied to optimize policy selection in the remediation of contaminated sites, the reduction of contaminants entering aquatic ecosystems, the optimization of water and coastal resources, and the management of other resources. In many of these studies, the researchers have explicitly taken into account the opinions of local community groups and other stakeholders through focus groups, surveys, and other techniques and formally integrated these opinions into the decision process. Many papers reviewed conclude that the application of MCDA methods provides a significant improvement in the decision process and public acceptance of the suggested remedial or abatement policy.

Even though our literature review was focused on environmental applications, the same trend is observed in other fields. Recent publications, as well as sessions at SRA meetings, show an increased number of MCDA applications in homeland security, military, energy, and other applications areas. MCDA is also being linked with risk assessment and life-cycle assessment in the context of emerging threats.



Michael Greenberg, *Editor in Chief*
 Karen Lowrie, *Managing Editor*

Volume 30 of *Risk Analysis*

This year marks Volume 30 of *Risk Analysis*. It was three decades ago that the new Society for Risk Analysis (SRA) began to publish its flagship journal. Ever since then, the journal has been devoted to publishing first-rate scientific articles from a wide range of disciplines dealing with analysis, assessment, management, perception, and communication of health and environmental risks. We plan to publish an article at the end of Volume 30 that traces the history of the journal through interviews with past editors. We hope readers will enjoy this special 30th anniversary tribute to the journal.

The next in our continuing series of biographical profiles will be about world-renowned Stanford economist Kenneth Arrow, who spoke at the 2009 SRA Annual Meeting. Look for this profile in our June issue.

Thompson New Area Editor for Engineering

The editors of *Risk Analysis* take this opportunity to gratefully thank SRA Fellow and Past President Yacov Haimen for his five years of outstanding service as area editor for engineering and to announce that the Council has appointed SRA Fellow and Past President Kimberly Thompson to serve as the new area editor for engineering. Kim is president of Kid Risk, Inc., which focuses on using probabilistic and dynamic models to address children's risks, with an emphasis on modeling complex systems. Kim received her

BS and MS in chemical engineering from Massachusetts Institute of Technology and she sought to help revitalize the SRA Engineering and Infrastructure Specialty Group during her term as SRA president. She has published multiple articles in *Risk Analysis* and in many other journals, including *Reliability Engineering and System Safety*, *The Lancet*, and *System Dynamics Review*.

SRA Member Survey Responses

Last fall, the Society sent survey questions from the editors to all SRA members. We received nearly 500 responses and 134 written suggestions. Ninety-five percent of respondents agreed that the journal publishes important research, with 84 percent feeling that we publish research directly relevant to their interests.

Regarding specific types of articles, 93 percent want more review articles, 80 percent like combinations of perspectives and commentaries, and 78 percent prefer more theme issues. All of these are priorities for the editorial staff. Among these, review articles have been the major challenge. We published the first one in the April 2010 issue, and others are being discussed. If you have ideas for review articles and writers, please let us know.

Regarding delivery of the journal, 87 percent want us to continue monthly publication, and almost two-thirds (63 percent) would be satisfied to have only an electronic copy of the journal. Other helpful suggestions were offered, and we thank those of you who responded to the survey. These data are an important part of our efforts to set priorities for the journal for 2010 and beyond.




Call for Nominations for 2010-2011 SRA Officers

The Nominating Committee invites nominations for the following officer and Council positions in the Society's fall elections for 2010-2011:

President-elect Three Councilors

The terms of office and duties for each position, and the role of the Nominating Committee, are set forth in the SRA Bylaws (www.sra.org/about_bylaws.php). Active members of SRA may submit in writing to the Nominating Committee the name and proposed office for any qualified nominee. Please submit nominations by **1 May 2010** (preferably by email) to Nominating Committee Chair Jonathan Wiener, email: wieners@law.duke.edu, phone: 919-613-7054, AND to David Drupa, email: ddrupa@burkinc.com, phone: 703-790-1745.

Additionally, as provided in the Bylaws, any active member may submit a petition to list a candidate on the next annual ballot for one of the open positions. Such petitions must include the signatures of at least five percent of the current SRA membership (i.e., at least 90 signatures of other active members), and the completed petition must be received by the Council by 15 May 2010, in time for its June midyear Council meeting, for the candidate to be listed on the ballot.



**Risk Analysis in Action
SRA Annual Meeting
5-8 December 2010
Salt Lake City, Utah
Call for Papers
Deadline 4 June 2010**

*Photo by
Steve Greenwood,
Salt Lake Convention &
Visitors Bureau*

SAVE THE DATE. The 2010 Society for Risk Analysis (SRA) Annual Meeting will be held at the Salt Palace Convention Center in Salt Lake City, Utah, 5-8 December 2010. This year, the 30th anniversary of the SRA, the theme is “Risk Analysis in Action.” Join nearly 1,000 colleagues dedicated to the science and the art of risk analysis—risk assessors, managers, communicators, and more—in settings ranging from government to academia and from nonprofits to business.

PRESENTATIONS AND POSTERS. Be sure to submit your abstract for an oral presentation or poster no later than Friday, 4 June 2010, via the online submission form available at http://www.sra.org/events_2010_meeting.pup. The submission deadline is firm; the Web link will be closed after that date.

As in past years, there is a limit on presentations by a single person. Each individual may submit one abstract for oral presentation, one symposium proposal, and one abstract for poster presentation (although individuals may also serve as co-authors on other submittals). Oral presenters should anticipate 15-minute talks, with an additional five minutes allotted for questions and discussion.

SYMPOSIA. Symposia on specific topics are encouraged! Consider organizing a symposium with multiple speakers using the online form (Web site address below). Be sure to submit your symposium proposal in advance of the 4 June deadline to obtain a symposium number. This identifying number must be referenced by each individual submitting an abstract for inclusion in the symposium. Please note that the overall conference deadline will apply to all abstracts, including those submitted as a part of symposia.

Specialty groups and regional organizations should consider organizing symposia as well. These symposia themes can be generated by a single specialty group or regional organization or can be proposed jointly by multiple groups.

WORKSHOPS. Organize a Continuing Education Workshop to be held on the Sunday preceding the annual meeting (5 December). The workshop proposal information is online at the main Web site (see below).

AWARDS. Apply for a Student or International Travel Award or a Specialty Group Student Paper Merit Award by checking the relevant box on your online submission form.

SPONSORSHIP/EXHIBITION. To be a sponsor of the 2010 SRA Annual Meeting, or to sponsor your organization’s exhibit booth, or to include your book in the book exhibit, please contact Lori Strong at lstrong@burkinc.com no later than 4 June 2010.

YOUR IDEAS. Please share your ideas and suggestions for making the meeting even better by contacting Rachel Davidson at rdavidso@udel.edu.

THANKS. Many thanks to the members of the Annual Meeting Program Committee who have generously agreed to serve the Society in this capacity: President-elect Rachel Davidson (chair), Gary Bangs, Rick Belzer, Steve Bennett, Laure Canis, Gail Charnley, Julie Fitzpatrick, Kurt Frantzen, Stanley Levinson, Steve Lewis, Igor Linkov, Margaret MacDonell, David Oryang, Cesar Pinto, Louie Rivers, Lisa Robinson, Paul Schlosser, Thomas Seager, Stuart Shapiro, and Ron White.

See you in Salt Lake City!

Meeting information and online forms—www.sra.org/events_2010_meeting.php



Committees

Conferences and Workshops Committee

Jim Lambert, Chair

We look forward to receiving your proposals for continuing education workshops for the 2010 SRA Annual Meeting in Salt Lake City. Check the “Events” link at the SRA Web site for how to submit a workshop proposal before mid-May. We have offered between a dozen and 20 workshops per meeting in recent years on the Sunday prior to the start of the annual meeting. Recent offerings have included probabilistic risk analysis, benchmark dose modeling, introduction to risk analysis, risk management, dose response for endocrine disruptors, cumulative and mixtures assessment, nanotechnology, risk governance, and chemical-specific adjustment factors. We particularly encourage SRA specialty groups to identify topics and/or organize workshops. Net revenues from each workshop are divided evenly between the event organizer and the Society general fund. Workshop organizers elect that their portion of the net revenues be distributed to their regional organizations or specialty groups, to their agency/company/university, or as their personal professional fee. Contact the chairs of the Conferences and Workshops Committee subcommittee on annual-meeting events for expert feedback

A sample of upcoming SRA-sponsored events

- JIFSAN Food Safety Risk Analysis Training Courses; Online; throughout 2010
- Health Effects Institute, Annual Conference; Alexandria, Virginia; 25-27 April 2010
- Effective Risk Communication: Theory, Tools, and Practical Skills for Communicating About Risk; Boston, Massachusetts; 17-19 May 2010
- 14th International Workshop on Quantitative Structure-Activity Relationships (QSARs) in Environmental and Health Sciences; Montreal, Canada; 24-28 May 2010
- JIFSAN Food Safety Risk Analysis Training Courses—Summer Integrated Program (SIP); Washington, DC; June 2010
- Climate Change: Global Change and Local Adaptation; Hella, Iceland; 6-10 June 2010
- 2nd iNTeg-Risk Conference 2010: New Technologies & Emerging Risk; Stuttgart, Germany; 14-18 June 2010
- Dose-Response Assessment Boot Camp; Washington, DC; 18-22 October 2010

At www.sra.org/events find the latest notices of SRA sponsorship of upcoming events. For more information about any of the above, contact Conferences and Workshops Committee Chair Jim Lambert (lambert@virginia.edu).

on your developing proposal: Jacqueline Patterson (patterson@tera.org) and Margaret MacDonell (macdonell@anl.gov).

The SRA sponsors numerous events of interest to SRA members apart from those associated with the annual meeting. Sponsorship conveys advertisement in the SRA RISK *newsletter* and use of the SRA logo and has proven beneficial to organizers who are seeking funding from agencies and industry. The “Events” link at sra.org describes how to propose an event for SRA sponsorship. Our non-annual meeting event subcommittee chairs, Amber Jessup (Amber.Jessup@hhs.gov) and Jim Wilson (wilson.jimjudy@att.net), can assist with these proposals.

Contact the lead of our Conferences and Workshops Committee video task force, Rick Belzer, to find our plans for distributing video content

of several past SRA workshops.

New and continuing SRA members are needed to join the Conferences and Workshops Committee. We meet monthly or more often by teleconference and once in person at the annual meeting. We invite your ideas for events of all types both on and off the annual meeting.

Regions Committee

Donna Vorhees, Chair

The Society for Risk Analysis (SRA) Regions Committee met during the 2009 SRA Annual Meeting in Baltimore, Maryland. Representatives from 10 regional organizations discussed:

1. Ideas for improving SRA’s Web site to increase coordination among regions. Jim Butler provided an update on his work to implement one of these ideas: a global calendar that would include events sponsored by all re-

gional organizations in the United States and around the world. One representative from each regional organization would have authority to add events to the calendar, including links to abstracts, presentation slides, and possibly video presentations. Jim reported that it would be relatively easy to provide email notifications of new postings on the Web site and reminders of events that will occur in the coming month. Peg Coleman and Rao Kolluru will coordinate the effort to make these changes. Until these changes are made, regional organi-

zations should continue to send event announcements to Jim Butler (webmaster@sra.org).

2. The status of planning for the next World Congress and the role of regional organizations. Jonathan Wiener, Alison Cullen, and Daniela Leonte will co-chair the Third World Congress for Risk, which will be held in the Summer of 2012 in Sydney, Australia.
3. The creation of SRA-China and progress on the creation of new regional organizations in India, Korea, Egypt, and South Africa.
4. Activities sponsored by individual regional organizations over the past year. In addition to reporting their regional activities, several participants requested information and support:
 - a. Brandolyn Thran is starting a new regional organization in the Nevada area; meeting participants provided guidance.
 - b. Representatives from SRA-Latin America expressed concern about the expense and difficulty with coordination of events in such a large region. SRA will send all regional representatives an email that summarizes specific ways in which SRA can support regional organizations, i.e., the Speaker's Bureau, Initiatives funding opportunity, and administrative support from SRA (e.g., budgeting, communication options such as conference call meetings, and webinars).
 - c. Douglas Johns is reinvigorating the Research Triangle/North Carolina Regional Organization.
 - d. Yasunohu Maeda discussed plans for an SRA-Japan meeting in 2012.
 - e. Peg Coleman will spearhead an Initiatives Proposal among at least four U.S. regional organizations to expand membership and areas of expertise by reaching out to organizations that are not well represented in individual regional organizations.
 - f. Rao Kolluru discussed an event to discuss security for New York City's water supply.

Everyone expressed great appreciation for Olivier Salvi's extensive and successful service in expanding SRA's presence with new regional organizations around the world. Thank you, Olivier!



ANNOUNCING THE WORLD CONGRESS ON RISK III SYDNEY – AUSTRALIA – SUMMER 2012

Co-chairs:

Professor Alison Cullen – University of Washington
 Professor Jonathan Wiener – Duke University
 Dr Daniela Leonte – University of New South Wales

Contact the SRA Secretariat to join the organizing effort: ddrupa@burkinc.com





Regional Organizations

SRA-Australia/New Zealand

www.acera.unimelb.edu.au/sra/index.html

Janet Gough, President

The SRA-Australia/New Zealand (SRA-ANZ) 2009 4th annual conference was held over three days in Wellington, New Zealand, in September 2009. On the first day, two workshops were held. The first of these was a workshop on uncertainty led by Dr. Keith Hayes from Commonwealth Scientific and Industrial Research Organisation in Hobart. Keith reported on the progress of one of the Australian Centre of Excellence for Risk Analysis projects looking at aspects of uncertainty in risk analysis including variability and “incertitude.” The afternoon workshop on risk communication was led by Dr. Karen Cronin from ESR and provided a good opportunity for discussion and evaluation of different approaches to communicating about risk issues. Both workshops were well attended by between 40 and 50 people. The conference proper, held over the following two days, provided a range of interesting papers that stimulated discussion. The conference concluded with a lively panel discussion on the role of risk analysis in regulation.

The SRA-ANZ conference provides participants with an opportunity to keep up to date with the latest applications of risk analysis methodologies and to see trends in approaches. The main focus of the first three conferences was risk analysis techniques with a primary application in biosecurity. The 2009 conference showed more diversification towards more general environmental risk analysis supporting our stated purpose, which is “to provide an opportunity for an inclusive, broad-based society that promotes communication between disciplines, a breadth of tools and viewpoints, and platforms for training, workshops, and conferences.”

The workshop and conference presentations are all available on the SRA-ANZ Web site at <http://www.acera.unimelb.edu.au/sra/2009/index.html>.

The SRA-ANZ annual general meeting was held as part of the conference. At this meeting, it was confirmed that the 5th annual conference in 2010 will be held in Sydney, 27-29 September. We are in the planning process. As details become available they will be published on our Web site (<http://www.acera.unimelb.edu.au/sra/index.html>).

SRA-ANZ is now in its fifth year of operation, with over 200 members encompassing a diverse collection of risk practitioners and organisations across Australia and New Zealand.

The objectives of SRA-ANZ are:

- To serve as the focal point for interaction of members of the Society and other interested individuals and organisations in Australia and New Zealand.
- To further understanding, awareness, and appropriate applications of risk analysis and to promote an exchange of ideas and practical experiences among members of

the academic, professional, industrial, and regulatory communities involved in risk analysis and risk management in Australia and New Zealand.

- To hold scientific and educational meetings.

SRA-Japan

www.sra-japan.jp/english/events.html

Akihiro Tokai, President

The 2010 business meeting and annual symposium of SRA-Japan will be held 18 June 2010 at Sanjyo-kaikan, University of Tokyo.

The 2010 annual conference of SRA-Japan will take place at Meiji University, Tokyo, 26-28 November 2010.

For more information, see <http://www.sra-japan.jp/english/events.html>.

SRA-Europe

www.sraeurope.org

Julie Barnett, Secretary

19th Society for Risk Analysis-Europe Conference Risk, Governance & Accountability

21-23 June 2010

King's College London, United Kingdom



King's College London is delighted to host the 2010 SRA-Europe conference this coming June. The special theme of the conference is “Risk, Governance & Accountability.” This theme reflects the increasing centrality of risk analysis to decision making in a wide range of policy and organisational contexts, such as climate change, the financial crisis, environmental pollution, terrorism, and health and social policy.

We have had a huge response to our call for papers, with over 200 abstracts submitted for symposia, presentations, and posters that consider the conference theme as well as traditional SRA themes across a broad range of disciplines, perspectives, and issues.

Confirmed keynote speakers so far include:

- Baruch Fischhoff, Carnegie Mellon University
- Ethel Forsberg, Director General, Swedish Chemicals Agency
- Alan Irwin, Copenhagen Business School
- Nick Pidgeon, Cardiff University
- Geoffrey Podger, Director General, Health and Safety Executive
- Tim Smith, Chief Executive, Food Standards Agency
- Kip Viscusi, Vanderbilt University
- Jonathan Wiener, Duke University

We are also delighted to announce a plenary session on financial risk with:

- Jon Danielsson, The London School of Economics and Political Science
- Michael Power, The London School of Economics and Political Science
- Steve Priddy, Association of Chartered Certified Accountants
- Nigel Thrift, Warwick University

King's is one of England's oldest and most prestigious university institutions. Its location in the heart of central London on the banks of the Thames will give delegates an exciting opportunity to enjoy the cultural life that London has to offer.

For example, King's is within easy walking distance of many of London's iconic and world-famous attractions, such as Tate Modern, the British Museum, the Houses of Parliament, St Paul's Cathedral, and the theatre district of Covent Garden. For tennis fans who would like to stay longer in London, the conference opens at the start of Wimbledon fortnight.

The provisional programme became available on 1 April 2010.

For more information, please see the Web site: www.kcl.ac.uk/sspp/srae2010.

New England www.sra-ne.org

Amy B. Rosenstein, President

The New England Regional Organization (SRA-NE) is moving forward, teaming with other regional organizations, with the application to SRA for a new initiatives funding request to (1) increase the knowledge of risk assessment as a career in university settings and (2) increase membership in SRA. We are hoping that this initiative will be funded and that we can move ahead with scheduling briefings with faculty and students during the next academic year.

A poster session was held 1 April 2010 at Camp Dresser & McKee Inc. in Cambridge, Massachusetts, to highlight current research from around the region. Students and post-doctoral researchers, as well as individuals from academia, government, and consulting, presented a short overview of

their work and their posters, followed by a dinner and social hour. This event provided an opportunity to learn about multiple topics and to introduce students and post-doctoral researchers to each other, to SRA-NE, and to prospective employers. A list of poster presenters may be found on the SRA-NE Web site (www.sra-ne.org). On 15 April 2010, SRA-NE held the annual joint meeting with the Massachusetts Licensed Site Professionals Association. Igor Linkov of the U.S. Army Corps of Engineers presented "Methods of Decision Analysis for Assessing Feasibility/Cost-Benefit Decisions." More information and registration may be found at www.lspa.org.

Southern California

Kristin Hockett, President



Mark Whitney of ABS Consulting, Inc., provides a presentation on the API 752 updates at the Southern California Society for Risk Analysis Dinner Meeting.

The Southern California Society for Risk Analysis (SCSRA) held a dinner meeting on 14 January 2010 to discuss the facility siting requirements for explosions, fire, and toxics, including updates to the American Petroleum Institute (API) Recommended Practice 752. Mark G. Whitney from ABS Consulting's Extreme Loads and Structural Risk Explosion Hazards and Design Group provided an informative presentation outlining the changes to Recommended Practice following investigations into industrial accidents. The dinner meeting was held at the Torrance Civic Center (Torrance, California) and was well attended, with approximately 30 attendees.

Additionally, we are in the process of planning our annual meeting, which will be held on Thursday, 13 May 2010, at the Southern California Gas Company in Downey, California. A snapshot of our lineup is outlined below.

Risk Management Plan Updates

Speakers from the U.S. Environmental Protection Agency (EPA), California Occupational Health and Safety Administration (Cal-OSHA), and California Emergency Management Agency (CalEMA) will provide a 10-year retrospective and discuss the future of the California Accidental Re-

lease Prevention Program (CalARP), Process Safety Management (PSM), and federal Risk Management Plan (RMP).

Human Health Risk Issues

The Human Health Risk Issues session will include presentations for “Risk Based Model for Contaminated Site Closures” and “Managing the Climate Change—Greenhouse Gases.” The SCSRA’s own Krishna Nand and Mohan Balagopalan will be providing insight for the risk-based model, while Jill Whynot from the South Coast Air Quality Management District (SCAQMD) will be presenting on greenhouse gases.

Keynote Presentation

Our keynote presentation will be provided by Donald Holstrom, JD, an investigation supervisor for the Chemical Safety Board (CSB). His presentation will outline recent chemical safety board investigations and associated recommendations.

Research Triangle www.rtc-sra.org

Douglas Johns, Chair


The Research Triangle Regional Organization held a symposium on nanotechnology on 19 January 2010. Four local experts in various areas of nanotechnology (human health effects, ecological effects, risk communication, and regulation) presented research findings and participated in a panel

discussion. The event was well attended and was also streamed live on the Internet. The video was archived and is available for viewing at www.rtc-sra.org. We also recently co-sponsored an environmental engineering symposium organized by the Department of Civil, Construction, and Environmental Engineering at North Carolina State University. Several members of our regional organization attended and awarded graduate student Ye Cao with the Best Poster in Risk Analysis for her poster titled “Modeling of Human Exposure to in-Vehicle PM_{2.5} from Environmental Tobacco Smoke.” We are in the process of planning another symposium, likely to be held autumn 2010, focusing on issues related to genetically modified organisms (GMOs).

Metro Region

Rao Kolluru, President

The SRA Metro Region (NY-NJ-CT) conducted a seminar on Water-Infrastructure Security at Columbia University on 11 February 2010. Here is a link to the meeting video, but it is not permanent: www.dkv.columbia.edu/video/alumni/watersecurity_1021. Please download the file if you wish.

The seminar presented perspectives on two lifelines we take for granted—water and infrastructure safety—from two ends of the planet: the United States and Bangladesh. The seminar also offered a glimpse for students of all ages into emerging career opportunities at the intersections of environment, health risks, and public health. 



Specialty Groups

Dose Response Specialty Group www.sra.org/drsg

Jeff Gift, Chair

The Dose Response Specialty Group (DRSG) Web site can be accessed at <http://www.sra.org/drsg>. The Web site includes executive committee and member contact information, bylaws, meeting minutes, information about and abstracts from past teleseminars, and detailed information about application for the student research award program and past winners.

DRSG activities planned for 2010 include a student awards program, a quarterly teleseminar series, and organization of symposia at the annual meeting. DRSG is also a co-sponsor of the 2010 Alliance for Risk Assessment workshop series that is described on page 7 in this newsletter. Details regarding the DRSG student awards program and upcoming teleseminar series are provided below.

Student Awards

DRSG is pleased to offer a merit award to a student conducting graduate research in dose-response assessment. The research may be on any topic broadly related to dose-response assessment, including but not limited to laboratory

investigation, methods development, comparative analyses, novel applications, studies on strengthening the role of dose-response assessment in risk assessment, uncertainty analysis, harmonization, dosimetry, genetics, and molecular biology. In addition to the peer recognition of the student’s scientific accomplishment, the award includes a registration fee waiver to the 2010 SRA Annual Meeting, an engraved plaque, and a \$500 honorarium.

The DRSG award winner will present his/her results and receive his/her award at the annual meeting. The award is merit based and competitive. All abstracts must be submitted for presentation at the 2010 SRA Annual Meeting, 5-8 December 2010, in Salt Lake City, Utah, following normal SRA guidelines for abstract submission (visit www.sra.org/events_2010_meeting.php for meeting dates, guidelines, and deadlines).

See the DRSG Web site (<http://www.sra.org/drsg>) for information, examples of winners’ abstracts from previous years, and what must be completed by the abstract submission deadline. Questions concerning the DRSG award procedures should be addressed to Paul Schlosser, PhD, Vice-Chair, DRSG, U.S. Environmental Protection Agency, 919-541-4130; email: schlosser.paul@epa.gov.

Teleseminar Series

DRSG is continuing its quarterly teleseminar series under the leadership of Chair-elect Lynne Haber, with teleseminars in April, June, and September. The 6 April 2010 teleseminar featured a discussion by Michael Laufersweiler and Steve Olin on “Threshold of Toxicologic Concern (TTC).” The TTC approach was developed by the U.S. Food and Drug Administration in the 1980s as a means to more efficiently address questions related to the safety of food packaging materials that have some potential to migrate to foodstuffs, but at levels that would result in exceedingly small human exposures. The approach is based on the fundamental premise that there is an exposure to untested chemicals below which adverse health effects will be negligible or absent.

Slides for the April teleseminar can be downloaded from the DRSG Web site (<http://www.sra.org/drsg>).

Other DRSG News

DRSG is developing draft criteria for the review of symposia proposals submitted to DRSG in 2010 in an effort to expedite the review process and ensure balanced, quality proposals. After evaluating the success of this internal effort, DRSG will report to SRA and encourage discussion among the various specialty groups to develop criteria for 2011 that could be consistently applied for all symposia proposals and across all specialty groups.

Ecological Risk Assessment Specialty Group

Jerry Cura, Chair

“Putting ecology into ecological risk assessment” is a topic that has entered the literature in various overview and site-specific articles over the past year. For examples, the Environmental Protection Agency Risk Assessment Forum addresses the topic in its recently published workshop on population level risk (see http://www.epa.gov/raf/files/population_level_era_report_final.pdf) and the recent Critical Review addressing the relationship between community ecology and ecotoxicology (Clements and Rorh, Community responses to contaminants: Using basic ecological principles to predict ecotoxicological effects, *Environmental Toxicology and Chemistry*, V28(9):1789-1800).

At our specialty group meeting in Baltimore in December, we discussed the idea of a workshop on this topic. In the interest of moving this discussion forward, we are going to host a session at our annual meeting in Salt Lake City in December 2010 on just that topic, “Putting Ecology Into Ecological Risk Assessment.” If any members want to contribute to this session, please contact Jerry Cura (jjicura@gmail.com).

Additionally, SETAC, SRA, and SETAC Europe will be cooperating on a joint meeting to address topics in ecological risk assessment. Igor Linkov and Jerry Cura will represent SRA on the organizing committee. As of this writing, SETAC is represented by Charlie Menzie and Janet Burris.

The topics and venue for that meeting are as yet unformed, but I have been pushing for an agenda that includes the ecological aspects of risk assessment. I will keep the SRA membership informed.

Additional suggested sessions for the Salt Lake City meeting include:

- A session on ecological risk assessment in Great Salt Lake similar to the very successful “Chesapeake Bay” session we held in Baltimore (please contact Jerry Cura [jjicura@gmail.com] if interested in contributing).
- A session Kurt Franzen is hoping to pull together on ecological risk assessment as applied to natural resource utilization.
- A possible session on ecological risk assessment in arid environments.

Please let us know if you have any ideas regarding sessions.

Finally, we are still looking for nominations for chair-elect for the Ecological Risk Assessment Specialty Group. Please let me know if you are interested or have a colleague who may be willing to serve.

Engineering and Infrastructure Specialty Group <http://sites.google.com/site/sraeiscg>

Ariel Pinto, Chair

The Engineering and Infrastructure Specialty Group (EISG) Web site (<http://sites.google.com/site/sraeiscg>) has some new functionalities designed for EISG and general SRA members alike. Everybody is encouraged to check these out and contribute:

- RSS feed page—provides convenient and summarized feed of new *Risk Analysis* articles. If there are other feeds that may be of interest to members, please send the Webmaster a note (ariel.pinto.odu@gmail.com).
- White paper page—provides a venue where white papers from members of the group can be posted. The objective is to facilitate discussion, exchange of ideas, and eventual publication in *Risk Analysis*.
- Events page—provides calendar of events culminating with the SRA meeting in December.

Economics and Benefits Analysis Specialty Group www.sra.org/ebasg

Lisa A. Robinson, Chair

The Economics and Benefits Analysis Specialty Group (EBASG) has been pursuing several activities suggested during our December meeting. Many of these activities involve increased use of Internet resources to provide information to our members, including updating our Web site frequently and sending periodic email newsletters. We also developed a links page (www.sra.org/ebasg/links.html) that includes key guidance documents of potential interest to members and hope that you will suggest additional items to

post. Finally, thanks to Aylin Sertkaya from the Eastern Research Group (our secretary/treasurer), we now have an EBASG Google Discussion Group. To join the group, go to the EBASG Web site (www.sra.org/ebasg) and click on the link in the side menu.

We are currently considering options for developing seminars, workshops, or symposia on topics such as behavioral economics or the expected new Executive Order on regulatory analysis and review. These events may be held over the summer or in conjunction with the 2010 SRA Annual Meeting. We plan to survey our members soon to identify the topics of greatest interest and hope that you will also start thinking about presentations and symposia for the 2010 annual meeting.

Please feel free to contact any of the EBASG officers—me, Amber Jessup (vice-chair), Dominic Mancini (immediate past chair), or Aylin Sertkaya (secretary/treasurer)—with your suggestions or concerns. We look forward to hearing from you!

Biological Stressors Specialty Group www.biostressors.org

David Oryang, Chair

The Biological Stressors Specialty Group (BSSG) has completed an exciting 2009, highlighted by the 2009 SRA Annual Meeting in Baltimore, where the BSSG sponsored seven symposia with 32 oral presentations, and 14 poster presentations.

During the annual business meeting, the BSSG gave student awards to Jade Mitchell-Blackwood (Drexel University), Yin Huang (Drexel University), and Mark Weir (Drexel University).

On 10-11 December 2009, the BSSG co-sponsored a workshop on “New Tools, Methods, and Approaches for Risk Assessment.” The workshop was a resounding success, with over 75 attendees, and had sessions on (1) the current state of dose-response modeling approaches for use of animal model data and extrapolation to predict human dose-response for microbial pathogens, (2) application of proteomics and genomics to environmental, chemical/toxicological, food safety, drug, and medical product risk assessment, (3) metrics and tools used in risk and benefit analysis, and (4) use of different databases in risk assessment. The proceedings of the workshop and presentations will be available through the BSSG Web site by 1 May 2010 (www.biostressors.org).

Managing the tension between complexity and utility is an ongoing challenge for the field of biostressor risk assessment. The BSSG welcomes you to join in the quest for methods, tools, and solutions.

We thank Steve Anderson from the Food and Drug Administration Center for Biologics Evaluation and Research (outgoing chair) for his outstanding leadership during 2009, and welcome Stephen Beaulieu from RTI International as chair-elect.

The BSSG looks forward to expanding its membership in 2010 by reaching out to all risk analysts involved with minimizing/regulating (1) human pathogens transmitted via food, water, air, organs, blood, and body fluids and excretions, (2) zoonotic pathogens, (3) biologically produced disease agents (such as allergens and mycotoxins), (4) plant and animal pathogens and pests, and (5) invasive species and genetic material.

In case you have questions, please contact David Oryang at david.oryang@fda.hhs.gov.



Pantheon of Risk Analysis

The Pantheon of Risk Analysis, launched in 2008, honors deceased giants in the field on whose shoulders we now stand and showcases how high-quality risk analysis can advance knowledge and the public good.

Any Society for Risk Analysis (SRA) member may nominate a candidate to the past president; the SRA Council selects the inductees.

In 2008, the SRA inducted 35 initial honorees into the Pantheon of Risk Analysis. In 2009, the SRA added seven new inductees nominated by SRA members:

- Peter Bernstein
- Nils Bohlin
- Ward Edwards
- Ronald A. Fisher
- William Sealy Gosset (Student)
- Gilbert F. White
- Aaron Wildavsky



Photo by John Collings

The full list is on the SRA Web site, at www.sra.org/about_pantheon.php, with links to the relevant Wikipedia page on each honoree.

New nominees are welcome. To nominate other legends in the field, please contact Past President Alison Cullen (alison@u.washington.edu).



What Do We Do?

— a quarterly look at the incredibly diverse field of risk analysis —

Ian Solon

Where are you a student?

Drexel University

What are you currently studying?

I just completed my master's in architectural engineering with a concentration in building systems while maintaining a fellowship focusing on microbial risk assessment in the built environment.

How is risk analysis a part of your current studies?

I researched different methods trying to improve the extraction of bacteria. My focus was extracting a surrogate, *Bacillus thuringiensis*, from the causative agent of anthrax from pleated air conditioning filters. An efficient extraction method allows for the filter to be used as a passive air sampler of the entire building. The information provided by the extraction results could provide data towards assessing exposure risk quantitatively.

How did you decide to pursue further academic study in risk analysis?

I am interested in heating, air conditioning, and ventilation systems and maintaining a clean indoor environment as well



as the risks associated with poor indoor air quality and contamination from terrorist attacks.

What jobs, fellowships, work study, etc., have you had related to risk analysis?

Microbial Risk Assessment in the Built Environment Fellowship at Drexel.

What is the most interesting/exciting part of your studies?

I have had the opportunity to take courses over many disciplines.

Do you have any advice for other students considering studies in a risk analysis area?

Risk analysis is needed in various subject matters and can be combined with most interests while allowing you to investigate things from a new perspective.

How has membership/involvement in the Society for Risk Analysis (SRA) helped you in your studies and work?

SRA has provided me with the opportunity to learn from experts in various risk fields on how to better examine what I have been researching.

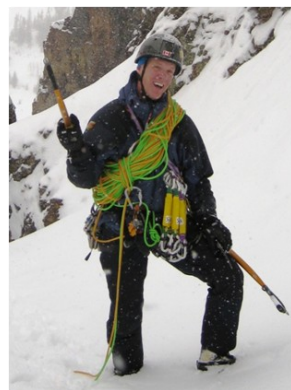


Member News

Robert C. Lee

Robert C. Lee has recently joined Neptune and Company, Inc. (www.neptuneinc.org/about.htm) as a risk and decision scientist.

Robert has been involved in risk and decision analysis, and has been a member of SRA, since 1993. As a consultant, he started out in human health risk assessment of hazardous waste sites and was involved in the "early days" of probabilistic risk analysis ap-



plied to environmental problems. He later branched out into informing a wide variety of risk and decision problems, including toxicological evaluations, ecological risk assessment, cumulative impact assessments, food safety, risk and decision analyses of engineered structures, and similar assessments in the United States, Canada, and Europe. Robert was a full-time academic researcher from 2001 to 2009 and focused on applying risk, decision, and economic analyses to health system issues. During this time, he also directed a unit that conducted systematic reviews, economic analyses, comparative effectiveness research, and similar assessments to inform health technology (drugs, devices, procedures, etc.) funding and adoption decisions in Canada. Robert has

a BS in botany from North Carolina State University, a BS in science education from Oregon State University, and an MS in environmental health from the University of Washington. He has additional training in toxicology, public health, simulation modeling, economics, and business management. He is an author of over 90 published journal articles, proceedings, book chapters, reports, and abstracts, plus dozens of consulting reports. He has served on a number of expert panels for both environmental and health-system issues. Robert is based in Albuquerque, New Mexico, and can be contacted at rlee@neptuneinc.org.

David M. Hassenzahl

David M. Hassenzahl was recently recognized with the University of Nevada, Las Vegas 2009 Outstanding Department Chair Award. He has stepped down as chair and will spend the 2010-2011 academic year on sabbatical at the National Council for Science and the Environment in Washington, DC.



David and his family will be living in Alexandria, Virginia, and he looks forward to a year as a member of the National Capital Area Regional Organization.






News and Announcements

IEAM Call for Papers: Energy Security and Environmental Risk

The editorial board of the journal *Integrated Environmental Assessment and Management* (IEAM) announces a special call for papers addressing the challenges of securing new energy sources and distribution networks while managing the associated environmental risks and resource constraints.

Inquiries should be directed to Dr. Igor Linkov, U.S. Army Engineer Research and Development Center (Igor.Linkov@usace.army.mil) or Dr. James H. Lambert, University of Virginia (Lambert@virginia.edu). We welcome the submission of papers by June 2010, with publication of the special issue of IEAM expected in early 2011. 



Advertisements

CENTRA Technology, Inc.

CENTRA Technology, Inc. (CENTRA) is a rapidly growing small company providing technical and national security analysis to U.S. government and commercial customers. We have offices in Burlington, Massachusetts, and Arlington, Virginia. We have immediate openings for Risk Analysts in our Arlington, Virginia, office. The work will be performed in the Washington, DC, area.

Description: CENTRA is seeking talented professionals to provide technical and national security analysis for the U.S. government, especially in the area of homeland security risk analysis. Successful candidates will perform security risk analysis; threat, vulnerability, and consequence analysis supporting risk analysis; and security risk management. They also will develop, assess, document, institutionalize, and apply risk management processes and methodologies to inform policy and programmatic decisions.

Prerequisites: BS/BA or an MS/MA in a technical area, such as statistics, operations research, economics, decision analysis, and/or systems engineering or significant training/experience in one or more of these areas.

- Excellent oral and written communication skills, organizational skills, creativity/critical thinking ability.
- Strong data analysis skills using statistical techniques

and Excel-based models. Training/experience in statistics, operations research, economics, decision analysis, and/or systems engineering is preferred.

- Experience working with security professionals, law enforcement, the Intelligence Community, the national laboratory system, and/or the federal government is a plus.
- Active SECRET security clearance preferred, TOP SECRET security clearance a plus.
- Applicants must be U.S. citizens.

We offer a full range of benefits, including competitive salary, comprehensive health plan including dental coverage, company-paid life and disability insurance policies, 401(k) plan with company match and profit sharing, ESOP, incentive bonuses, and a generous educational reimbursement program. CENTRA Technology, Inc., is an Equal Opportunity Employer.

If you would like to apply for this position, please email your résumé, a writing sample (Microsoft Word format), and a cover letter to rossj@centratechnology.com.

Please reference position title and job code HSRAD032010 in the subject line.

RISK newsletter Advertising Policy

Books, software, courses, and events may be advertised in the Society for Risk Analysis (SRA) RISK newsletter at a cost of \$250 for up to 150 words. There is a charge of \$100 for each additional 50 words.

Employment opportunity ads (up to 200 words) are placed free of charge in the RISK newsletter. Members of SRA may place, at no charge, an advertisement seeking employment for themselves as a benefit of SRA membership.

Camera-ready ads (greyscale) for the RISK newsletter are accepted at a cost of \$250 for a 3.25-inch-wide by 3-inch-high box. The height of a camera-ready ad may be increased beyond 3 inches at a cost of \$100 per inch.

The RISK newsletter is published electronically four times a year. Submit advertisements, with billing instructions, by 30 December for the First Quarter issue (published mid-January), 30 March for the Second Quarter issue (mid-April), 30 June for the Third Quarter issue (mid-July), and 30 September for the Fourth Quarter issue (mid-October). Send to Mary Walchuk, Managing Editor, RISK newsletter, 115 Westwood Dr., Mankato, MN 56001; phone: 507-625-6142; fax: 507-625-1792; email: editormw@hickorytech.net.



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Deadline for RISK *newsletter* Submissions

Send information for the **Third Quarter 2010** SRA RISK *newsletter*, which will be on the SRA Web site mid-July, to Mary Walchuk, RISK *newsletter* Editor (115 Westwood Dr., Mankato, MN 56001; phone: 507-625-6142; fax: 507-625-1792; email: editormw@hickorytech.net) no later than **21 June 2010**.

Future Society for Risk Analysis Annual Meetings

**2010—Salt Lake City, Utah
5-8 December**

2011—Charleston, South Carolina

2012—San Francisco, California

2013—Baltimore, Maryland

The Society for Risk Analysis (SRA) is an interdisciplinary professional society devoted to risk assessment, risk management, and risk communication.

SRA was founded in 1981 by a group of individuals representing many different disciplines who recognized the need for an interdisciplinary society, with international scope, to address emerging issues in risk analysis, management, and policy. Through its meetings and publications, it fosters a dialogue on health, ecological, and engineering risks and natural hazards and their socioeconomic dimensions. SRA is committed to research and education in risk-related fields and to the recruitment of students into those fields. It is governed by bylaws and is directed by a 15-member elected Council.

The Society has helped develop the field of risk analysis and has improved its credibility and viability as well.

Members of SRA include professionals from a wide range of institutions, including federal, state, and local governments, small and large industries, private and public academic institutions, not-for-profit organizations, law firms, and consulting groups. Those professionals include statisticians, engineers, safety officers, policy analysts, economists, lawyers, environmental and occupational health scientists, natural and physical scientists, environmental scientists, public administrators, and social, behavioral, and decision scientists.

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