



Specialty Group Leaders Provide Reports from the Field

Adam M. Finkel

As the new chair of the Society for Risk Analysis (SRA) Specialty Groups Committee, I asked the chair of each group to take a stab at an end-of-the-year “report from the field”—to give SRA members unable to keep up with developments outside their own area of special interest a brief sense of what might be new and exciting in other specialties. I appreciate the thoughtful submissions and hope they will spur interest in related sessions that the groups are sponsoring at the 2005 SRA Annual Meeting in Orlando, 4-7 December.

Exposure Assessment

Katherine Walker

What’s hot in exposure assessment? Since some form of exposure assessment is an integral part of the risk assessment paradigm, efforts to improve the methodology are ongoing in many research areas. I’ll highlight just a few:

Clean Air Regulations and Mercury Exposures in Fish: Just this past March, the US Environmental Protection Agency (EPA) promulgated the Clean Air Mercury Rule, the first rule any national government has produced to not only cap, but also reduce, emissions of mercury from coal-fired power plants. Together with the EPA’s Clean Air Interstate Rule, the Mercury Rule is projected to reduce mercury emissions by about 70%.

Analysis of exposures to mercury through its transport, deposition, transformation, and uptake in aquatic organisms played an important part in developing the rule. The potential risks posed to women of childbearing age and to their unborn children from eating fish contaminated with methylmercury was a key finding of the analysis. See <http://www.epa.gov/air/mercuryrule> for more information.

Regulations like the Clean Air Mercury Rule often rely on theoretical risks estimated by integrating projected exposures with dose-response data derived from very different types of

studies. Much of exposure measurement research has been focused on concentrations of contaminants in various media but has shed little light on the relationship between exposure and human health. Two large new federal health studies are seeking to remedy this problem, the National Children’s Study and the Agricultural Health Study.

National Children’s Study: Sponsored by a consortium of federal agencies, the National Children’s Study will follow over 100,000 children in 96 centers around the United States, studying the effects of a wide variety of “environmental” factors on health and development. Children will be followed before birth until they reach the age of 21. Both natural and man-made environmental factors will be evaluated,

including biological and chemical factors, physical surroundings, social factors, behavioral influences, genetics, cultural and family influences, and geographic location. See <http://nationalchildrensstudy.gov> for details.

The Agricultural Health Study: The Agricultural Health Study plans to do for agricultural workers and their families what the previous study hopes to do for children. The multiyear study (*Reports from the Field, continued on page 4*)

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President's Message

Risk Analysis—For the People

The tragedy of Hurricane Katrina should give pause for anyone in the risk business. I am writing on 5 September, while there are, likely, people still dying in isolated quarters of the New Orleans area. Although there will be better evidence later, the passage of time can also blur both memory and emotion. The “blame game” is currently a repeated phrase. One can safely assume that it will be played long after this column is published. What might fade, though, is the “shame game” of wondering whether we have somehow been part of this risk management failure.

The theme of my presidential columns has been how we can create behaviorally realistic risk analyses. My first column considered the appropriate level of complexity, as dictated by risk realities and decision makers' needs. The second considered how to identify behavioral determinants of system performance and use research results (rather than ad hoc assumptions) to estimate them. The third considered using expert judgment wisely, recognizing the experts are people, too.

I had planned to conclude by writing about behaviorally realistic risk communications. I hoped to close the loop (begun with the first column) by reflecting on how to give people the information that they need in a form that they can process efficiently. These goals clearly were not achieved for many people along the Gulf Coast. An investigation worthy of those who perished, those who had their lives disrupted, and those who labored to save them would examine the roles played by the following factors:

Irrational citizens. To what extent did people fail to do sensible things, despite getting good information in a timely fashion? Where this happens, an emergency system that relies on communication fails the test of behavioral realism. Evaluating this possibility requires empirically establishing citizens' goals and beliefs (for example, did they know the risks, but stay behind for loved ones? Did they hear conflicting messages and not know which to trust? Did they stick around for the looting?—not nice behavior, but not necessarily irrational).

Incomprehensible communications. To what extent did citizens not understand what they were told? Where they do not, either the emergency system should be abandoned or better communications are needed. Evaluating this possibility requires evidence regarding how actual messages were interpreted and how far the

envelope of understanding could be expanded with properly designed messages.

Irrelevant communications. To what extent did messages contain the information that citizens needed most? Where they did not, the system should be redesigned to identify the facts that are most critical to citizens' needs (and do not go without saying). Evaluating this possibility requires determining whether communications were driven by public health concerns (focused on the welfare of the audience) or public affairs concerns (focused on the image of the source).

Inappropriate communicators. To what extent did citizens so disdain the messenger that they ignored critical, comprehensible information? Where that happens the messenger needs to be improved or replaced. Evaluating that possibility requires looking at the perceived honesty and competence of both the individual communicators and the institutions that they represent.

Inadequate analysis. To what extent did communicators not know what to say, because the risks had not been analyzed properly? Where that happens, officials should remain silent until they have done their homework. Evaluating this possibility requires looking at the staffing and work practices of the official organizations.

Impossible situations. To what extent did communicators have nothing useful to say? Where that is the case, the honest thing to say is that “You're on your own”—and try to be more useful the next time. Evaluating this possibility requires risk analyses that are realistic about the behavior and performance of official organizations.

These are intellectually challenging evaluations. Like other forensic work, they are best pursued in a nonpartisan manner, with the needed natural, engineering, and behavioral science expertise. Lawyers have a valuable role as experts in legal constraints, but not as arbiters of politically acceptable truths. Having local residents on the team should increase its relevance to their concerns, realism about their circumstances, and comprehensibility to others like them. Their presence should also help to sustain the passion for getting it right next time.



Baruch Fischhoff
Pittsburgh, PA

2005 SRA Annual Meeting

“25th Anniversary of SRA: Past, Present, and Future of Risk Analysis”
4-7 December, Buena Vista Palace Resort & Spa, Orlando, Florida

Technical Sessions

Monday-Wednesday, 5-7 December—Hundreds of individual presentations on topics covering engineering, exposure, dose response, economics, decision analysis, ecological risk assessment, food and water, biological stressors, risk communication, law, and others.

Plenary Sessions

Monday, 5 December, 8:30-10:00 a.m.—25th Anniversary of SRA: Past, Present, and Future of SRA and Risk Analysis
Wednesday, 7 December, 8:30-10:00 a.m.—Global Opportunities for Risk Analysis: International Case Studies

Luncheon Speakers

Monday, 5 December, noon-1:30 p.m.—Distinguished Award Winner
Tuesday, 6 December, noon-1:30 p.m.—TBD

Poster Sessions

All day Monday, 5 December, and Tuesday, 6 December—On both days presenters will be with their posters and refreshments will be provided from 10:00 to 10:30 a.m. and from 3:00 to 3:30 p.m.

Golf Tournament

Sunday, 4 December, 10:15 a.m., at Mystic Dunes Golf Club

Die Hard Risk Analysts

Attend the last session on Wednesday, 7 December (3:30-5:00 p.m.) and you will receive an official SRA-designed T-shirt and have the chance to win full credit toward 2006 SRA Annual Meeting fees.

Wednesday Roundtable Discussions

A variety of roundtable discussions will take place noon-1:30 p.m. on Wednesday, 7 December (order a box lunch):

- How to Get Funding from the National Science Foundation: Myths, Opportunities, and Realities (Chair Robert O'Connor)
- The Collaborative Large-Scale Engineering Analysis Network for Environmental Research (CLEANER) Project Office (Chair Mitchell Small)
- Criteria (of excellence) for Submission of Abstracts (Chairs Gail Charnley, Kara Morgan, and Steve Lewis)
- Internationalization of SRA (Chair Pertti Hakkinen)
- Policy Issues in Risk (Chair Jack Fowle)

More

SRA Annual Business Meeting; exhibits of products, services, and books; a job-hunting service; specialty group meetings; New Member Breakfast; Chapters and Sections Breakfast; Specialty Group Chairs Breakfast; Graduate Student Breakfast; 2nd World Congress Planning Session; and more.

Go to www.sra.org for updated program and registration information.

Continuing Education Program Workshops

The continuing education program for the annual meeting in Orlando this December will include the following half- and full-day workshops. Consult the Society for Risk Analysis Web site at <http://www.sra.org/events.php> or the preliminary program mailed to members for descriptions of the workshops. Early registration deadline is 4 November. (Contacts from whom further information can be obtained are given in parentheses.)

- Recommended Practice Regarding Selection, Application and Interpretation of Sensitivity Analysis Methods Applied to Exposure or Risk Assessment Models; FULL DAY; <http://www.ce.ncsu.edu/risk/workshop04/>; \$295, \$355 on site (Amirhossein Mokhtari, amirh357@yahoo.com)
- Benchmark Dose Modeling and Its Use in Risk Assessment; FULL DAY; www.tera.org/education/srabmd2005.htm; \$249, \$309 on site (Jay Zhao, zhao@tera.org)
- Beyond Monte Carlo: An Introduction to Imprecise Probabilities; FULL DAY; <http://www.ramas.com/iporlando.htm>; \$175, \$235 on site (Scott Ferson, scott@ramas.com)
- Integrated Risk Communication and Decision Analysis: Process, Methods and Tools; FULL DAY; http://www.risktrace.com/RiskComm_MCDA.html; \$350, \$410 on site (Igor Linkov, linkov@cambridgeenvironmental.com)
- For Creators and Users of Health Risk Assessments: Reading Between the Lines of an Environmental Health Risk Assessment; FULL DAY; <http://chppm-www.apgea.army.mil/HRACourse>; \$275, \$335 on site (Brandolyn Thran, brandolyn.thran@us.army.mil)
- Zoonotic Diseases Risk Assessment and Mitigation; FULL DAY; <http://www.vera.fr/SRA>; \$275, \$335 on site (Moez Sanaa, msanaa@vet-alfort.fr)
- Beyond Point Estimates: Risk Assessment Using Interval and Possibilistic Arithmetic; HALF DAY AM; <http://www.ramas.com/interval.htm>; \$175, \$205 on site (Arlin Cooper, acooper@sandia.gov)
- Incorporating “Omic” Information into Risk Assessment and Policy; HALF DAY AM; http://depts.washington.edu/irac/SRA_genomics_seminar.html; \$250, \$280 on site (Elaine Faustman, faustman@u.washington.edu)
- Intermediate Topics on Health Risk Assessment of Chemical Mixtures; HALF DAY PM; http://www.epa.gov/ncea/pdfs/sra/mixtures_handbook.pdf; \$249, \$279 on site (Linda K. Teuschler, teuschler.linda@epa.gov)
- Replacing Default Values for Uncertainty Factors with Chemical Specific Adjustment Factors: Reducing Uncertainty in Noncancer Risk Assessment; HALF DAY; www.tera.org/education/SRA_CSAF2005.htm; \$175, \$205 on site (Lynne Haber, haber@tera.org)

(Reports from the Field, continued from page 1)

will enroll over 89,000 individuals, including private and commercial pesticide applicators and their spouses. The primary goal of the study is to evaluate the impact of environmental, occupational, dietary, and genetic factors on the health of this population. The study is being jointly sponsored by the National Institutes of Health (specifically, the National Cancer In-

stitute and the National Institute of Environmental Health Sciences) and the EPA. For further information about the study, see <http://www.aghealth.org/>.

Since health outcomes may be affected by interactions among a number of factors, some of which are not typically included in exposure assessments focused on a particular contaminant, both of these studies represent an important advance in the role of exposure assessment in risk assessment.

Ecological Risk Assessment

Randall Ryti

The objective of ecological risk assessment is to determine if a stressor creates an unacceptable impact on an assessment endpoint. Stressors are most typically chemicals, but biological stressors (for example, introduced species) and physical stressors (for example, dredging) are also often evaluated. Endpoints are defined by the entity and an attribute. For example, incidence of mortality is an organism-level attribute summarized for a population-level entity. Although the typical state-of-the-practice for ecological risk of chemical contaminants utilizes simple comparisons of contaminant data to abiotic media benchmarks, or calculation of hazard quotients, there is a growing capability and literature of more complex and quantitative ecological risk assessments. Because ecological risk assessments typically follow a tiered approach, the more complex tools are generally applied to more difficult problems.

As one indicator of the advances of the more quantitative tools in ecological risk assessment and other disciplines, the Society of Toxicology organized a meeting in its Contemporary Concepts in Toxicology series with the title "Probabilistic Risk Assessment (PRA): Bridging Components Along the Exposure-Dose-Response Continuum." Over three days in July 2005, the organizers of this meeting provided a venue for dialogue on the state of the science and the bridges/barriers for PRA implementation in four disciplines: exposure assessment, ecological risk assessment, human health and medical decision analysis, and decision analysis/multicriteria decision analysis/cost-benefit. Invited experts in these complementary and overlapping disciplines developed draft issue papers for review and comment by the participants. Some of the common themes in this meeting included:

- Decision making is improved through explicit consideration of uncertainty.
- However, analysts often confuse the decision makers and other members of the public with inconsistent or nonintuitive tables and charts.
- One solution is to involve communication specialists in critiquing and improving presentation materials.
- There are many methods available for quantitative assessments of uncertainty.
- However, this variety of methods and disagreement among the experts on the correct method can slow PRA adoption.
- Solutions may include standardization of tools for some disciplines or more general improvements to the peer-review process for complex risk assessments.

PRA methods are a natural fit for ecological risk assessment for several reasons. Ecological risk assessments most often focus on a population level, which means that exposures and effects are evaluated for a collection of organisms leading directly to concepts of variability in either exposure or effects. PRA methods in ecological risk assessment are not new; over 10 years ago Glenn Suter published a solution to the exposure-effect problem involving joint probability distributions. More recent PRA applications include modifications to population viability assessments used in conservation biology; contaminant effects or other stressors can be incorporated into demographic models for either a single population or an interconnected metapopulation. Readers interested in more details on advances in PRA are encouraged to look for the synthesis area papers from this meeting, which the organizers plan to publish in a journal.

Risk Communication

Cliff Scherer

Natural disasters, the lingering anticipation of terrorist attacks, and the increasing complexity of science have continued to bring new attention to risk communication. Whether it be efforts to improve the quality of drinking water supplies, reduce the likelihood of humans being attacked by grizzly bears, assure a population that the incidence of cancer in a neighborhood is not unexpectedly high, or alert a population to evacuate an area, practitioners continue to work to design better messages, to better understand how target populations react to messages, and to evaluate the success of risk communication efforts. The increased attention, however, has sharpened the need for improved communication theories which can help ensure greater success in risk communication efforts. While communication researchers and practitioners have known for

some time that simply putting information into the environment does not guarantee behavioral change or even attention to the message, that understanding is becoming more apparent to policy makers, scientists, and leaders at the community, state, and national levels.

One area which is gaining the attention of risk communication researchers is the emerging area of translational research, a process of moving highly complex science-based information to lay populations in an effort to improve decision making of individuals, groups, and communities. Translational research could perhaps be described as the antithesis of communication designed to persuade rather than inform. We fully expect increased attention to risk communication to continue, giving communication researchers the opportunity to explore new and challenging ways of communicating risk information.

Dose Response

Ralph Kodell

Several years ago, Dose Response Specialty Group (DRSG) member and SRA Past President James Wilson worked with Leslie Hushka of the American Chemistry Council (ACC) to secure a small grant from the ACC to the DRSG to fund a law-student research project on the definition and legal use of the term “adverse effect” in risk assessment. Jonathan Wiener, Professor of Law, Environmental Policy, and Public Policy Studies at Duke University, kindly provided supervision through the Duke Center for Environmental Solutions. A report on the research was prepared by Duke University students Kelsey Stansell and Mark Marvelli and was provided to the DRSG in July 2005.

The term “adverse effect” is common to all specialties in risk analysis. The concept of adversity, however well or poorly defined, underlies the very notion of risk in risk analysis. In the dose-response arena, there is no need for a dose-response assessment unless the response of interest is considered adverse. Because of the perceived importance of the term adverse effect in risk analysis and regulation, and given the perceived absence of a generally accepted definition of the term, the DRSG was pleased to accept the funds from the ACC to facilitate the survey conducted by the law students.

The approach taken by Stansell and Marvelli was to survey the uses of 19 specific search terms, grouped into five general types, in order to characterize and compare the uses of these terms in the laws of the United States. The five general terms were “adverse effect,” “adversely affected,” “risk,” “endanger,” and “threat.”

These terms, which appear in almost every title of the United States Code, were surveyed across all US federal statutes, federal agency regulations, and federal judicial opinions issued since 1970. The terms were not surveyed in the laws or regulations of the 50 states and state courts, nor in international legal texts.

The major finding of the study was that the federal statutes themselves give little or no definition or guidance regarding the precise meanings or intended interpretations of adverse effect and related terms. It was found that, although some statutes purport to define adverse effect and related terms, the definitions are often circular and of little value because they include the term being defined. It was concluded that the lack of precise definitions of adverse effect and similar terms leaves their interpretation and application largely in the hands of agency staff. Stansell and Marvelli commented that this may be appropriate because agency staff are more expert than members of Congress or their staff, or judges, in assessing adverse effects. However, they also stated that the lack of definition or guidance on what constitutes an adverse effect may result in determinations lacking transparency and in inconsistencies across agencies and statutes. They commented that this situation may offer an opportunity for expert groups such as the SRA to contribute helpful insights and guidance to improve adverse-effect determinations by legislative, administrative, and judicial actors.

In transmitting the report to the DRSG, Professor Wiener commented that if the report were circulated to DRSG members and to others with experience inside EPA and other agencies, he suspected it would elicit numerous examples and testimonials of specific interpretations and determinations of adverse effect that are not reported in official documents, and hence not found in the students’ searches, but which would be relevant to actual agency practice. The DRSG thanks Wiener and his students for the report. It has been circulated to the DRSG membership with the invitation to provide comments to Wiener and the DRSG. Responses from members of other SRA specialty groups are most welcome. The report is available on the DRSG Web site at www.sra.org/drsg. However, this posting does not necessarily imply DRSG endorsement of the opinions and conclusions expressed in the report.

Biological Stressors

(formerly Food/Water Safety Risk)

Ewen Todd

Zoonoses are animal diseases that affect human health. Recent examples of zoonoses that have expanded their geographic range include West Nile virus and the agent responsible for bovine spongiform encephalopathy (BSE) and variant Creutzfeldt-Jakob disease (vCJD). The emergence of SARS (severe acute respiratory syndrome) in 2002-2003 illustrated the potential for zoonoses to spread rapidly with ubiquitous global travel and trade. SARS is an atypical pneumonia caused by a previously unrecognized coronavirus originating in China from civet cats that were caught in the wild and sold as food. West Nile fever, originating in Africa, has spread rapidly over the past five years across the continental United States, seven Canadian provinces, Mexico, and parts of the Caribbean, affecting thousands of birds, horses, and humans. Transmission is through the mosquito and it is now resident in the wild bird population. The detection of five cases of BSE in cattle in North America during the past three years provided a stark reminder of the vulnerability of internationally integrated commodity markets to the transboundary movement of zoonoses. As 2005

draws to a close, the naturally occurring biological hazard that poses the greatest threat in terms of public health and socioeconomic disruption is the H5N1 subtype of highly pathogenic avian influenza (HPAI, or “bird flu”) that has caused large outbreaks of poultry disease in Asia. The virus has crossed the species barrier to infect humans, with a high case-fatality rate. Some serological evidence suggests that very limited human-to-human transmission of H5N1 may have occurred, but as of the date of this writing (September 2005), the virus has not acquired the means for efficient human-to-human transmission. Historically, influenza pandemics are rare but recurrent events. The three influenza pandemics of the last century (1918-1919; 1957-1958; and 1968-1969) varied considerably in their dynamics and human toll. Given the capriciousness of microbial evolution, the risk of H5N1 was succinctly bounded by Laurie Garrett (“The Next Pandemic,” *Foreign Affairs*, July/August 2005): “[H]umanity could well face a pandemic unlike any ever witnessed. Or nothing at all could happen.”

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Risk Science & Law

Vern R. Walker

A major development of interest to the Risk Science & Law Specialty Group is Europe's evolving law on the roles of scientific bodies, courts, and other governmental institutions in conducting risk assessments and making risk management decisions. Of course, European legal decisions can have substantial practical impact on affected parties. But in addition, because the European Union (EU) is establishing new scientific bodies that are independent of its risk management institutions, this can make interactions between institutions more transparent and can provide more opportunity for judicial review of those interactions. Thus, there is more opportunity for making new law. European legislation and judicial decisions also tend to adopt legal rules that take opinions of international scientific bodies expressly into consideration.

The legal evolution in recent years has included the establishment of the European Food Safety Authority (an independent risk assessment agency established by Regulation [EC] No 178/2002 of the European Parliament and of the Council) and a series of important judicial decisions. Such decisions include *Bellio Fratelli* (Case C-286/02, 1 April 2004—involving an Italian confiscation of Norwegian fish flour for animal feed containing fragments of unidentified animal bones and possibly posing a risk of transmissible spongiform encephalopathy, or TSE), *Hahn* (Case C-121/00, 24 October 2002—involving an Austrian criminal prosecution for negligently marketing Danish smoked-fish products allegedly contaminated by *Listeria* bacteria), and *Pfizer Animal Health SA v. Council of the EU* (Case T-13/99, 11 September 2002—involving a Council ban on the antibiotic virginiamycin in animal feed).

In July of this year, the European Court of Justice added to this evolving law by deciding the case of *Commission v. CEVA Santé Animale SA* (Case C-198/03, 12 July 2005). The appeal to the Court originated from a complaint against the Commission by two manufacturers of veterinary medicinal products containing the active ingredient progesterone. In part, the complaint alleged that the Commission had failed in its obligation to approve progesterone for use as a veterinary medicinal substance that is not subject to a "maximum residue level" (MRL) and that this made the European Community liable to the companies for damages. The Court of First Instance, noting that the European scientific Committee on Veterinary Medicinal Prod-

ucts (CVMP) had twice recommended that the Commission should so approve progesterone, held that the Commission's inaction gave rise to liability on the Community's part.

The Commission appealed this judgment to the Court of Justice of the European Communities. A critical issue on the appeal was the extent of the discretion of the Commission not to act on the recommendation of the CVMP. The Court noted that while the CVMP did indeed recommend approval of progesterone, the Scientific Committee on Veterinary Measures Relating to Public Health (SCVPH), a scientific committee established under the authority of the Commission, had concluded (during the same time frame) that given the significant scientific uncertainty about hormone metabolism, no threshold level or acceptable daily intake could be established for progesterone. The Court held that, since "the Commission found itself facing a situation of continuing scientific uncertainty characterised by divergences between the scientific opinions adopted between 1996 and 1999 by the CVMP, on the one hand, and, on the other, the SCVPH and other international scientific bodies," the Commission's inaction did not trigger Community liability for damages.

This judgment contributes more questions to the evolving law than it contributes answers. How critical to the rule adopted in the decision is the fact that there were formal opinions of established scientific bodies on both sides of the issue? Would the outcome have been the same if the Commission had only had before it the recommendation of the CVMP, but had decided as a matter of risk management that it wished to be more precautionary than the CVMP had recommended? What management options did the Commission have legally, once the CVMP had recommended that an MRL was not necessary, but the SCVPH had advised that an acceptable daily intake was not scientifically derivable? In reaching its decision, the Court took a careful look at the timeline of the Commission's decision making, asking at each step whether the Commission's inaction was justifiable. How closely will the courts scrutinize in the future the step-by-step process of risk management in the face of scientific uncertainty, and what is the potential for an independent scientific body to constrain or compel the timing of those management decisions? These are some of the questions of importance to those who follow the interplay between "risk science and law."

Decision Analysis and Risk

Igor Linkov and Greg Kiker

Choosing an environmental management strategy can be a complex and difficult problem, yet it is among the most important decisions an environmental manager will make. Natural and human-made ecosystems are complex: they may contain multitudes of species and a variety of landscapes, they may be simultaneously straining under the pressure of human development, and analyses of them can be highly uncertain. Amidst all this uncertainty, the manager must balance competing forces to find a resource-efficient, technically supportable, and effective management strategy.

Traditional environmental management approaches (such as management of contaminated sites, natural resource management, etc.) often do not provide a clear and systematic decision rationale. The uncertainties that exist in monitoring and mod-

eled data, especially given the practical limitations of technical expertise, schedule, and finances, mean that some level of uncertainty is unavoidable when managers commit to selection of a single management option.

In response to these decision-making challenges, some regulatory agencies and environmental managers have moved toward more integrative decision-analytic processes, such as comparative risk assessment (CRA) or multicriteria decision analysis (MCDA). These methods are designed to raise awareness of the trade-offs that must be made among competing project objectives, to help compare alternatives that are dramatically different in their potential impacts or outcomes, and to help managers synthesize a wider variety of information. Comparative risk analysis has been most commonly applied within the realm of environmen-

tal policy analysis. Central to CRA is the construction of a two-dimensional decision matrix that contains project alternatives' scores on various criteria. However, CRA lacks a structured method for combining performance on criteria to identify an optimal project alternative. MCDA methods and tools, on the other hand, do provide a systematic approach for integrating risk levels, uncertainty, and valuation. MCDA helps decision makers evaluate and choose among alternatives based on multiple criteria using systematic analysis that overcomes the limitations of unstructured individual or group decision making. Although almost all decision analysis methodologies share similar steps of organization in the construction of the decision matrix (often the end result of the CRA process), there are many MCDA methodologies which each synthesize the matrix information and rank the alternatives by different means. Yet, taken by themselves, few MCDA approaches are specifically designed to incorporate multiple stakeholder perspectives or competing value systems.

Fortunately, MCDA tools can be naturally linked with an adaptive management paradigm for efficient applications to environmental problems. Adaptive management explicitly acknowledges the uncertainty in managers' knowledge of a system. As a consequence of this uncertainty, adaptive management holds that no single best policy can be selected, but rather a set of alternatives should be dynamically tracked to gain information about the effects of different courses of action. Adaptive management concepts were introduced more than 20 years ago, but their implementation to date has been primarily limited to a few large-scale projects in long-term natural resource management, where uncertainty is so overwhelming that optimization is not possible. Even though managers of smaller projects

are confronted with the same problems and often have to go through the frustrating experience of changing their management strategy when it fails, our review shows that the field of environmental management is far from accepting and using adaptive management approaches. Although adaptive management is recognized and even recommended by many state and government agencies, adaptive management applications vary widely in their implementation of the concept and there is no framework that robustly incorporates adaptive management in environmental practice.

The newly formed Decision Analysis and Risk Specialty Group (DARSG) will help in advancing the use of decision analysis and risk assessment tools in policy and practice and will also facilitate knowledge development and idea exchange. Currently, the group is cosponsoring the following activities where the issues listed above will be discussed:

- NATO/DoD Workshop on "Uncertainty and Decision Analysis for Environmental Security and Non-Chemical Stressors," (Fall 2006)
- NATO Workshop "Risk Management Tools for Port Environmental Security, Critical Infrastructure, and Sustainability" (16-19 March 2006, Venice, Italy, www.risktrace.com/ports)
- NATO Study Institute "Integrated Water Resources Management in the Middle East" (February 2006, Israel, www.natowater.org)
- Second SRA Workshop "Probabilistic Risk Assessment: Current Developments and Applications for Environmental Assessment and Management" (Seattle [tentative], March 2006, www.risktrace.com/pr2)




Chapter News

Upstate New York Chapter <http://esc.syrres.com/sraupstateny>

Tim Negley, Secretary

The Upstate New York Chapter has made significant strides since its initiation earlier this year. In June the chapter sponsored the first of two local annual symposia aimed at bringing together risk practitioners within Upstate New York. Approximately 35 people participated in the first symposium to discuss topics that spanned a broad range of risk analysis interests: local risk assessments and research to strengthen the scientific basis of assessments, law and uncertainty in case studies, a comprehensive risk framework for the Mohawks of Akwesasne, and risk communications during catastrophes. Many presenters acknowledged the challenges and motivations for interdisciplinary collaborations and partnerships, particularly to address low-probability/high-consequence events of terrorist attacks. Indoor and outdoor releases of chemical and biological agents were of local interest in aquatic and terrestrial environments. Two local cases of chemical contamination and restoration involved complex mixtures including chlorinated benzenes and polychlorinated biphenyls (PCBs) in Onondaga Lake and lead contamination and abatement in home environments.

The second Upstate New York Chapter symposium is scheduled for November and will be hosted at Cornell University. Syracuse Research Corporation has provided support for chapter teleconferences and symposia. The chapter maintains a Web site (<http://esc.syrres.com/sraupstateny>) for easy access to in-

formation about past and upcoming events and contact information for our recently elected officers and councilors. Organizations affiliated with the chapter to date include academic institutions (Cornell University, SUNY Environmental Science and Forestry, Syracuse University, Upstate Medical University), industry (Constellation Nuclear, Eastman Kodak, NYIEQ, Shaw Environmental, Syracuse Research Corporation, The Young Agency), and government (New York State Department of Health, Center for Environmental Health). New members are welcome and student membership is free.

Chicago Regional Chapter <http://www.sra.org/chicago>

Heidi Hartmann, Interim President

The Chicago Regional Chapter is planning a symposium focusing on children's health and risk issues. This one-day symposium will be held at the University of Illinois School of Public Health on 17 November 2005. The preliminary program includes speakers from industry, academia, and the government with expertise in children's health issues from regulatory, policy, and research perspectives. This symposium is envisioned to serve as an information exchange forum between scientists and regulators with the goal of identifying research questions and data gaps unique to this sensitive subpopulation and improving health risk assessment methods for children. Please see our Web site (<http://www.sra.org/chicago>) for more information about this SRA-sponsored symposium.





Riskophrenia

Steve Gibb

A number of simultaneous risk-reform efforts are underway at the Environmental Protection Agency (EPA), but because different federal actors are in charge of the evaluations, it is unclear whether the outcomes will cohere.

EPA staff are contending with a push from other federal agencies like the Defense and Energy Departments, which are seeking an expanded role in agency risk reviews of toxics like perchlorate, naphthalene, and trichloroethylene. The reviews would evaluate data for the agency's Integrated Risk Information System (IRIS), a compendium of chemical risk values state and federal regulators rely on to set environmental standards and cleanup levels. EPA staff fear that the proposed plan to expand the other agencies' and White House's involvement in IRIS may erode the agency's independence.

The White House Office of Management and Budget's (OMB) increased scrutiny over EPA toxics profiles, regulatory proposals, and guidance has also forced key risk policy changes. During his tenure at the White House, OMB regulatory overseer John Graham has set new requirements for peer review, data quality, economic and scientific analysis, and transparency. Although critics say Graham has employed technocratic tools to favor industry objectives, few doubt that his push to apply decision-analytic approaches to federal policy making has set a new bar for EPA initiatives.

And in another development, EPA science policy leaders also plan to approach the National Academy of Sciences in the coming weeks about generating another report on the current state of risk assessment practices, similar to the 1983 "Red Book" *Risk Assessment in the Federal Government: Managing the Process*. If the impact of the first report is illustrative, the second iteration is also likely to have broad implications for risk policy making in the coming decade.

Meanwhile, environmental groups are seeking inclusion in a broad review of EPA risk-assessment practices, citing the need for a more open process focused on the environmental community's long-standing concerns about the protectiveness of current risk assumptions. The review is part of a year-old effort to reform the agency's risk assessments in response to chemical industry criticisms and comes as the agency's research chief is awaiting Senate confirmation before taking charge of the reform effort.

EPA sources say the agency's approach to the risk-assessment review will not be determined until George Gray is confirmed to head the agency's Office of Research and Development (ORD). Gray, who was nominated last July, currently serves as executive director of Harvard University's Center for Risk Analysis.

In a 9 September letter to ORD officials, the California-based Center for Environmental Health and other activist groups urge EPA to include public interest groups "early in its review of its risk assessment practices so that the actual definition of problems with risk assessment, as well as identification of improved methods, reflects an inclusive and balanced public process."

The groups suggest EPA weigh options to traditional risk assessments such as "alternatives analysis" for safer chemicals that governments elsewhere are adopting. The letter also cites an EPA advisory panel's recommendation last June to better integrate alterna-

tives analysis to more fully realize the source-reduction goals of the Pollution Prevention Act.

In addition, the environmental groups say agency risk assessors fail to consider aggregate risk and the risks mixtures pose to children and adults. They also criticize an economics method often applied to risk conclusions that "results in diminishing the value of future health and environmental benefits." The method, called "discounting," can make policies that "would

New Editor Steve Gibb David Clarke Retires after Five Years of Service

Gen Roessler, Editor-in-Chief

The RISK newsletter staff wishes to thank David P. Clarke for his more than five years of service to the Society for Risk Analysis as editor of the newsletter column "Regulatory Risk Review." David's columns were always informative, sometimes provocative, and always interesting to read. When David could no longer write the column, he recommended a colleague, Steven Gibb, as a newsletter contributing editor. Steve begins his contributions in this issue.

Steve is chief editor for Inside EPA's *Risk Policy Report*, a leading environmental newsletter published by Inside Washington Publishers (IWP) and read by members of Congress, federal agencies, the National Academy of Sciences, and key industry and advocacy groups. *Risk Policy Report* is an investigative 40-page newsletter edited for scientists interested in environmental policy and policy makers interested in science. Steve's responsibilities encompass all aspects of reporting, editing, planning special issues, training other reporters, and supervising production.

In the summer of 2004, Steve was the recipient of a German Marshall fund Journalism Fellowship to research European chemicals legislation in Brussels for five months.

His education includes an MS in environmental science and policy from Johns Hopkins University and a BA in social sciences from Residential College, University of Michigan. He is a member of the Society of Environmental Journalists, the American Association for the Advancement of Science, and the Society for Environmental Toxicology and Chemistry.

Steve's recent publications include "Rolling Back the Regulatory State" in *The Environmental Forum*, a publication of the Environmental Law Institute, July/August 2002; "From Jeremy Bentham to John Graham: Towards a Calculus of Value(s)" in the *Johns Hopkins Journal of American Politics*, 16 July 2002; and "Science and Economics Prominent on EPA Agenda" in *Issues in Science & Technology*, a publication of the National Academy of Sciences, Spring 2001.

The newsletter staff welcomes Steve as an editor and looks forward to his upcoming columns.

be colossally valuable to the future appear to be of little value, and so not worth doing, today.”

EPA sources say should Gray be confirmed for the ORD slot, he is likely to determine the scope and agenda of the risk-practices review plan. “Any significant decisions on the staff risk review are awaiting the next ORD administrator,” according to one agency source.

The agency has yet to respond to a 5 April letter from the same environmental groups, although there have been informal communications, sources say.

EPA launched the risk review in response to chemical industry comments forwarded to the White House in 2004 criticizing the accuracy of some of the agency’s assumptions about cancer risks and exposures. In response, the agency drafted a “staff paper” outlining its position on these and a number of other issues under the leadership of former ORD head Paul Gilman.

Despite the departure of Gilman and other key officials involved in the review, the agency has collaborated with professional societies in planning workshops on emerging scientific methods, among other topics. Agency officials have previously stated that these workshops would be an important way for EPA to ensure that agency methods align with current practices in the field.

EPA, industry, and others sponsored a three-day technical workshop in early July in collaboration with the Society of Toxicology on probabilistic methods, which can be used to generate more realistic distributions of exposures and responses to toxins. Sources attending the meeting say it did not directly address the focus of EPA’s risk review but focused instead on technical issues and gaining broader acceptance of probabilistic methods by agency decision makers.

“It’s hard to tell where this risk practices review is going based on the workshop,” according to one attendee. And an EPA source adds that the workshop organizers sought to focus on “the sci-

ence” and not broaden the agenda to possible reforms to agency methods. “There was a tension between the EPA people working on the risk review and others who saw this as a scientific workshop on these approaches,” according to one source familiar with the issue. Other presentations on the risk-practices review were given at the Society for Risk Analysis annual conference last year, and more workshops are in the planning stages.

And the agency is forming a probabilistic working group to expand use of the methods which an organizer says OMB guidance and EPA’s staff risk paper both call for. “There’s strong momentum for the risk reform process based on the staff paper, but it is still being organized,” according to the source.

Although the overlapping impact of all of these developments illustrates the dynamism of the risk field at this juncture, it remains to be seen whether all the different actors driving these reforms can steer federal risk policy making in a more coherent direction. For example, congressional Democrats have warned that expanding the Defense and Energy departments’ input into IRIS reviews may represent a con-

flict of interest because of their cleanup liabilities for key toxics. And other critics say that if the Bush administration “walked its talk” on pursuing cost-effective regulations, much more aggressive air standards for particulate matter would result. These standards account for 70 percent of the total benefits federal regulations provide, according to OMB.

The next several years are likely to reveal further cases of how political pressures affect the implementation of technocratic approaches to risks and benefits. Whether a coherent way forward emerges, or some sort of riskophrenia results, may depend on the rules of the road being established by those who are driving.

Steve Gibb is chief editor of Inside EPA’s *Risk Policy Report* and is a German Marshall Fund Journalism Fellow. He can be reached at sgibb@iwnews.com. 

... it remains to be seen whether all the different actors driving these reforms can steer federal risk policy making in a more coherent direction.



Member News

Roger M. Cooke

Roger M. Cooke, professor of applied decision theory in the Department of Mathematics at Delft University of Technology (TU Delft) in the Netherlands, is the first appointee to the new Chauncey Starr Chair in Risk Analysis at Resources for the Future (RFF, www.rff.org) in Washington, DC.

At TU Delft, Cooke launched a master’s program on risk and environmental modeling. He joins RFF as a member of the Risk, Resource, and Environmental Management Division where his work will focus on implementation of uncertainty analysis in policy-related decision making.

The new Starr Chair was established by a \$2 million gift from Chauncey Starr, founder of the Electric Power Research Institute and a pioneer in the field of risk analysis.


Nicki Dennis

Nicki Dennis announces the formation of BSI British Standards Risk Management Technical Standards Committee. Dennis is head of Risk Market Development at BSI British Stan-

dards, which develops standards and standardization solutions to meet the needs of business and society and works with government, businesses, and consumers to represent United Kingdom (UK) interests and facilitate the production of British, European, and international standards.

Dennis said the newly formed BSI Risk Management Committee’s first task will be to coordinate the UK response to work within the International Organization for Standardization and to develop a framework for future work in risk management. Dennis asks that any UK-based SRA member who is interested in membership on this committee representing SRA should contact her (nicki.dennis@bsi-global.com).

Rex Brown

Members having difficulty accessing Rex Brown’s chapter “Environmental Regulation: Developments in Setting Requirements and Verifying Compliance” in the UNESCO electronic Encyclopedia of Life Support Systems (<http://www.eolss.net>) may contact him at rexvbrown@aol.com. 



Olivier Salvi, President-elect

“Major Risks Challenging Publics, Scientists, and Governments”

The 14th Society for Risk Analysis-Europe (SRA-E) Annual Meeting was held in Como, Italy, on 12-15 September 2005. It was hosted by Scira Menoni, SRA-E past president, at the Politecnico di Milano-Polo di Como.

Following the guiding theme “Major Risks Challenging Publics, Scientists, and Governments,” the three-day meeting was organized with plenary sessions in the mornings and five parallel sessions in the afternoons.

On Monday, after an introduction to the conference given by SRA-E President Scira Menoni and the warm welcome from R. Negrini, Rector of the “Polo di Como” of the Politecnico di Milano, the first keynote speech was given by Franco Foti from the Emergency Unit of the Sant’Anna Hospital (Italy). He presented his thoughts regarding risk communication within the health care system in ordinary and extraordinary situations. He gave very relevant examples of crises and detailed the management of the information and the role of the journalists in the crisis management. His presentation was discussed by Bruna De Marchi from Istituto di Sociologia Internazionale di Gorizia (Italy). She pointed out the importance to qualify and quantify the human impact of the disasters to proportionate the measures to manage the crisis. She explained also that crisis communication is a process that needs to be prepared before the event.

On Tuesday, the plenary speeches addressed more natural risk issues and the cooperation in risk management outside European borders. In particular, Jean-Jacques Wagner, from CERG, Université de Geneve (Switzerland), dealt with geological risks in Latin America and he presented his over 20 years of experience within national and international cooperation agencies. He explained how working at the local level with children can increase the awareness of the population vulnerable to natural hazards. Then Rosella Monti from Hydroaid (Italy) presented several projects carried out in the Middle East to control risks related to water. Those projects involved local, national, and European cooperation.

In addition, on Tuesday morning five workshops took place and gave the opportunity to the participants and SRA-E members to discuss and exchange ideas informally on risk issues. The objectives of these workshops were to share knowledge and experiences, to inform about the current work and ideas for the future, and finally to create a group of interest.

The topics of the workshops were:

- Use of multicriteria analysis and decision-making tools in risk management (Chair M. Merad).
- Land-use planning around hazardous plants and infrastructures (Chair G. Walker).
- Integration of risk management health, safety, and environmental protection (Chair O. Salvi).
- Governance in a risk-informed society and risk communication (Chair A. Alemanno).
- Civil defense and civil protection: Challenges for European

institutions after September 11 and Madrid, March 2004 (Chair G. Romano).

- Education and training: Challenges and emerging demands (Chair R. Reiss).

On Wednesday, A. Pugliano, Director of the Lombardia Regional Firemen Direction (Italy), addressed the risks in complex environments and took the example of the organisation and structure of special firemen units in Italy facing old and new threats. Then V. Petrini, an expert in structural engineering from Politecnico di Milano, presented the Italian experience in judging the ability of buildings after earthquakes.



Past President and Conference Chair Scira Menoni (center) greets Italian colleagues.

Because of the interest of the attendees stressed by the actuality on the hurricane Katrina that devastated Louisiana at the end of August, Laura Steinberg, from the University of New Orleans, specialist on na-tech (natural and technological) issues, shared her own experience and analysis of the situation in Louisiana. This unexpected speech was one of the most thrilling of the conference. The discussion, thanks to the participation of Nick Pidgeon and Warner North (former SRA president), raised several issues related to the influence of the politics and the social context on such an event.

During that morning too, the chairmen of the workshops gave an overview of the main outcomes. The main result of this initiative that will endure in the next conferences was the setting up of groups of interest with multidisciplinary expertise. Several actions were identified according to the groups; some of them decided to write a common position paper, others wanted to circulate a bibliography.

Branko Kontic, chairman of the 2006 conference, in Ljubljana, Slovenia, summarised the research topics presented through the posters.

Concerning the conference as a whole, about 190 people attended the meeting. Most participants came from Italy, the United Kingdom, France, the Scandinavian countries, Switzerland, and Germany, but we had the pleasure to also welcome participants from Japan, Taiwan, and Russia. Selected from 192 abstracts received, about 130 presentations were given by scientists and practitioners with a broad range of professions, meeting several topics aiming to address all the dimensions of risk issues thanks to the multidisciplinary approaches. The 33 sessions were thematically clustered in the following main topics: Legislation, regulations and juridical aspects of risk management; Economic aspects of damage prevention; Risk communication: Issues arising among scientists, civil protection authorities, between scientists, governments, and the public; Risk in complex environments: The need to consider na-tech disasters, chain of potential connected hazards, and vulnerabilities; Creating a risk reducing culture: Vulnerability reduction, structural and nonstructural preventive measures addressing both natural and technological disasters; and The concept of risk in public health in a global world.

Nine posters were lined up during the three days and attracted the attendees’ attention and provided the appropriate setting for discussions and professional exchange among the participants.

All keynote presentations (slides) and the book of abstracts will be put on the SRA-E Web site for downloading (<http://www.sraeurope.org/>).

The comments of the participants during the conference indicated that the quality of the presentations was highly appraised. Scira Menoni and her students' engagement in the organization was appreciated by the attendees and SRA-E owes them sincere thanks for organizing the conference in Como.

The attendees loved the location where the gala dinner was held. It was organized at the Villa Erba, which is a beautiful and famous place used to host international, high-level conferences and meetings, like the first event of the semester of the Italian European Union Presidency. The promenade along the lake after the dinner was a wonderful moment of conviviality among the participants.




President-elect Roberto Bubbico and Secretary Andrea Thalmann

The new SRA-E president, Olivier Salvi (INERIS, France), was introduced and he outlined the key actions that the Executive Committee agreed on for the coming year. First of all, the

Executive Committee wants to pay special attention to the membership and create an active risk community in Europe. The second axis of work is to increase the visibility of SRA-Europe, in particular towards the European Commission and European Authorities. Conscious that several associations and societies exist in the field of risk analysis and risk management, the fourth action where efforts will be concentrated will be on the development of synergies and links with other groups—for example, ESReDA (European Safety & Reliability Data Association) and ESRA (European Safety & Reliability Association)—in order

to avoid overlaps and fragmentation of the scientific community.

Finally, the Executive Committee will devote a particular effort to strengthen the relationship between the members because SRA-E is a unique society with a great diversity of expertise. Improving risk management in the future will need the combination of all the expertise of the members. In our evolving context, European citizens need the active scientific participation of all the members and the Executive Committee will do its best to assist them in sharing knowledge and expertise and making it useful for risk analysts and risk managers.

Updated information on the Executive Committee can be found at http://www.sraeurope.org/new/new_exc.html. 

Outlook and Next Conference

The 15th annual meeting of SRA-E will be in Ljubljana, Slovenia. Branko Kontic from the Environmental Impact Assessment Centre of the Josef Stefan Institute has agreed to be local organiser of the conference, which will take place in the summer of 2006.

SRA-E Executive Committee Business Meeting

The business meeting of SRA-E was held 14 September and was marked by a good attendance of the conference partici-



SRA-Japan

*Jun Sekizawa, SRA Japan President
University of Tokushima Professor*

English Web Site of SRA-Japan

It is our great pleasure to announce that we have started to operate an English version of the SRA-Japan Web site. Anyone interested in our activities, please visit <http://dss.sys.eng.shizuoka.ac.jp/sraJapan/english/index.html>.

Call for Papers and Participation for the Annual Conference of SRA-Japan

As announced earlier, the SRA-Japan section will hold its annual conference to share experiences in the risk-management field among Japanese and international researchers. This year the conference will take place at Osaka University 12-14 November 2005 and will be focused on "Risk-Based Capacity Building." The English Web site with meeting information can be found at http://rio.env.eng.osaka-u.ac.jp/risk/risk2005/english/index_eng.htm. We welcome participation and presentation of papers from overseas, especially on the opportunity of cross-cutting discussion toward today and tomorrow of risk-based capacity building.

Revision of *A Handbook of Risk Research*


The SRA-Japan section, through TBS Britannica, published *A Handbook of Risk Research* (375 pages) in 2000 by 90 writers (including nonmembers) on 117 sections. After five years of successful publication, we are revising the book with addi-

tions/modifications based on the recent progress in risk research and also abundant risk-related cases which happened during this period. Dr. Tohru Morioka, past president of the Society and a professor at Osaka University is leading this activity, and the revision will be published next year from Hankyu Communications which took over the publication right.

Environmental Risk Management Training Program

An educational program promoted by Osaka University Graduate School of Engineering and supported by a grant by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), Special Coordination Funds for Promoting Science and New Fields, is now offering scientific lectures and seminars by the most renowned professors and professionals in the risk management field. The program, coordinated by Professor Tohru Morioka, will introduce and develop a certification system for which the SRA-Japan is assisting in examining and approving the system. See details at http://rio.env.eng.osaka-u.ac.jp/risk/e_index.html.

Developing *A Dictionary on Risk-Related Terms*

A dictionary on risk-related terms is now under development, coordinated by Professor Michiaki Kai of the Oita University of Nursing and Health Sciences with the collaboration of SRA-Japan members to promote risk-related research and help the understanding of people who are working in the related areas. It is planned to be published next year by MARUZEN Co. Ltd. 

Managing Risks of Catastrophic and Extreme Events Call for Papers

Yacov Y. Haimes, Engineering Area Editor

The Society for Risk Analysis (SRA) will devote a special issue of its flagship journal, *Risk Analysis*, to the theme of managing risks of catastrophic and extreme events and to the roles of risk and security around the world today. These roles have been markedly redefined by events such as the unrest and conflict in the former Soviet Union, globalization, the shrinking of the world through e-commerce and information technology, the September 2001 attacks on the United States, the threats of weapons of mass destruction (chemical, nuclear, biological, and the “dirty bomb”), the increase of suicide bombing in the world, cyber attacks through supervisory control and data acquisition (SCADA) systems, high-altitude electromagnetic pulse (EMP) attacks, and the war in Iraq and the subsequent insurgency. On 26 June 2005, US Secretary of Homeland Security Michael Chertoff spoke at the Center for Catastrophic Preparedness and Response and the International Center for Enterprise Preparedness at New York University. He echoed the importance of risk analysis to address the not-unlikely risks of catastrophic events:

Because what we are trying to protect—and at the same time, preserve—is not only our lives, but also our way of life. That’s why we need to adopt a risk-based approach in both our operations and our philosophy . . . Risk management is fundamental to managing the threat, while retaining our quality of life and living in freedom. Risk management can guide our decision-making as we examine how we can best organize to prevent, protect against, respond, and recover from an attack.

Managing risks of catastrophic and extreme events is not a new challenge. The preparedness, response, and recovery from major natural hazards, such as earthquakes, floods, hurricanes, tsunamis, and major pandemics, have been on the agenda of every community in the world. Knowledge, know-how, and experience gained over the years in the risk management of natural hazards should serve us well in our quest to combat catastrophic events sponsored and executed by terrorists. In particular, the SRA’s *Risk Analysis* journal provides an authoritative forum for addressing the emergence of not-unlikely catastrophic terrorist attacks on civilian targets. To meet the new challenges highlighted by Secretary Chertoff, it is imperative to build upon the theory, methodology, and application of risk-management approaches developed and deployed by natural scientists and engineers, social and behavioral scientists, health scientists, legal experts, and others.

To this end, researchers and practitioners are encouraged to submit original papers for the SRA journal’s special issue on this theme. The complete manuscripts must be submitted to *Risk Analysis: An International Journal* by 15 February 2006 (www.sra.org/journal_manuscript.php). Following a rigorous peer-review process, submitting authors will be notified of the status of their papers within three months.



Committees

Chapters and Sections Committee

Rachel Davidson, Chair

Reminder to all chapters to consider taking advantage of the SRA Speakers Bureau—the Speakers Bureau makes available a modest fund to assist local SRA chapters with the travel and lodging expenses of bringing a current or former SRA official to speak at a local chapter meeting. This travel funding provides an excellent opportunity for the chapters to have internationally recognized risk experts participate in their local meetings. See the SRA Web site for a list of speakers and directions on how to participate, or contact Chapters and Sections Committee Chair Rachel Davidson (rad24@cornell.edu) for more information.

Education Committee

David Hassenzahl, Chair

The Education Committee continues to collect and share risk educational materials.

Please send your syllabi or links to your courses and programs to david.hassenzahl@ccmail.nevada.edu and visit the Web site www.unlv.edu/faculty/dmh/ratl.

We would like to schedule a meeting during the 2005 SRA Annual Meeting in Orlando. If you are interested in joining a discussion about the status and future of risk education, or otherwise participating in the committee, please let us know.





Specialty Groups

Dose Response Specialty Group

<http://www.sra.org/drsg>

Ralph L. Kodell, Chair

The Dose Response Specialty Group's (DRSG) third teleseminar of 2005 was presented 6 September by Mel Andersen of the CIIT Centers for Health Research. His title was "Computational Systems Biology and Dose Response Assessment." Mel presented to approximately 35 participants who viewed his slides from the DRSG Web site. Clearly, there was great interest among DRSG members in hearing Mel's insights in this "new" area, and he did not disappoint.

For the 2005 SRA Annual Meeting in Orlando, the DRSG has endorsed the following symposia: (1) Acute health-effect assessments and issues (organizer: Gary Fourman), (2) Sources of variation in toxicological studies and their effects on precision of results (organizer: Paul Feder), (3) Use of mode of action in EPA's 2005 cancer guidelines (organizer: Resha Putzrath), and (4) Acrylamide in food: The roles of laboratory rodents, the press, and warning labels in risk analysis (organizer: Sara Henry).

The DRSG Business Breakfast will be held Monday, 5 December, at 7:00 a.m. and the DRSG Mixer, which will again feature the presentation of the group's Student Award, will be Tuesday, 6 December, at 5:30 p.m. We hope that you will join us for these activities.

As always, you are invited to join the DRSG's monthly teleconferences on the first Tuesday of each month, 12:00 noon to 1:00 p.m. Eastern Time. The call-in number is 513-569-7897, and the access code is 2790# (help desk 513-569-7754). Even if you do not wish to participate on a regular basis, you might want to tune in for our teleseminars in March, June, and September. Please visit our Web site (<http://www.sra.org/drsg/>) for general information on DRSG activities.

Biological Stressors Specialty Group (formerly Food/Water Safety Risk Specialty Group)

Ewen C. D. Todd, Chair

At its 2 June 2005 meeting, the SRA Council approved a proposal submitted by the Food/Water Safety Risk Specialty Group officers to amend the charter of the group and redefine the group as the SRA Biological Stressors Specialty Group.

Biological stressors represent a distinct category of hazards that share many common features. Unlike chemical or physical hazards, biological stressors (a) grow, reproduce, and die, (b) disperse both actively and passively, (c) interact with other biological populations in the ecosystem, and (d) evolve. The scope of the new SRA Biological Stressors Specialty Group includes human pathogens transmitted via food, water, air, organs (including blood), and body fluids and excretions; zoonotic pathogens; biologically produced disease agents; plant and animal pathogens; plant and animal pests; invasive species; and invasive genetic material.

Examples of each of these areas include the following:

- Human pathogens transmitted via food: Salmonella, Listeria monocytogenes
- Human pathogens transmitted via water: Cryptosporidium parvum, Vibrio cholerae

- Human pathogens transmitted via air: Bacillus anthracis, Mycobacterium tuberculosis
- Human pathogens transmitted via blood and other organs: Hepatitis C, Creutzfeldt-Jakob disease (CJD) agent (via cornea transplant)
- Human pathogens transmitted via other body fluids and excretions: norovirus (vomit), Staphylococcus aureus (pus)
- Zoonotic pathogens: pathogens transmitted from animals to humans such as the West Nile Fever virus, avian influenza A (H5N1) virus
- Biologically produced disease agents: allergens, mycotoxins, seafood toxins
- Plant pathogens: Phakopsora pachyrhizi (the fungus that causes Asian soybean rust), tobacco mosaic virus (for example, in tomatoes)
- Animal pathogens: Classical Swine Fever (Hog Cholera) virus, Newcastle disease virus (for example, in poultry)
- Plant pests: Ceratitis capitata (Mediterranean fruit fly), nematodes
- Animal pests: Cochliomyia hominivorax (screw-worm fly, an ectoparasite of warm-blooded animals), Haematobia irritans (horn fly, a blood-feeding pest of cattle)
- Invasive species: Dreissena polymorpha (zebra mussel), Pueraria montana (kudzu)
- Invasive genetic material: promiscuous plasmids that confer antibiotic resistance

The 2005 SRA Annual Meeting Program contains a number of symposia of particular interest to the Biological Stressor Specialty Group Members:

- 25 Years of Food Safety Risk Analysis: Has Our Food Gotten Safer?, chaired by Felicia Wu and Jim Wilson
- Assessing and Managing Risks from Introduced Species, chaired by Todd Bridges
- Risk Assessment of Cyanobacterial Toxins in Drinking and Recreational Water, chaired by Anthony Fristachi and Igor Linkov
- Risk Assessment for Biological Stressors: Past, Present, and Future, chaired by Mark Powell

Risk Communication Specialty Group

Cliff Scherer, Chair

The 25th anniversary of SRA presents an opportunity to examine the "Past, Present and Future of Risk Communication" in a symposium organized for Monday afternoon, 5 December 2005, in Orlando. The symposium will begin by examining the range of risk communication as exemplified in each of the SRA specialty groups: Decision Analysis and Risk, Dose Response, Ecological Risk Assessment, Economics and Benefits Analysis, Engineering, Exposure Assessment, Biological Stressors, and Risk Science & Law. By examining common themes, needs, and differences of risk communication in each of these areas, the symposium will attempt to identify how research and related theories can help improve the practice of risk communication. With relatively few theories originating specifically from the field of risk communication, we will explore the question of whether risk communication is so unique and complex that none of the existing theories truly aid in explanation or whether the breadth of risk communication is such that it requires a continued dependency on theories originating from other fields. In

identifying the gaps in our understanding, researchers can begin to examine how to increase the predictive and explanatory power of risk communication theories.

The final session in the symposium will address the emerging area of translational research—how the construction of knowledge for lay audiences can facilitate greater understanding and increased trust.

Risk communication doesn't need to be your specialty to participate in this symposium. There will be short formal papers and lots of informal discussion. Our goal is to begin a discussion of the needs and future of risk communication. Please join us for this symposium Monday afternoon.

The Risk Communication Specialty Group mixer and business meeting will be held Monday evening; please plan to join us.

Ecological Risk Assessment Specialty Group

<http://www.neptuneandco.com/sra-erasg/>

*Randy Ryti, Chair; Todd Bridges, Chair-elect;
and Igor Linkov, Past Chair*

The 2005 SRA Annual Meeting in Orlando promises to have a wealth of ecological risk assessment contributions; the Ecological Risk Assessment Specialty Group (ERASG) will have papers each day of the annual meeting. ERASG also contributed papers to the multidisciplinary sessions. ERASG will have a two-part symposium on Assessing and Managing Risks from Introduced Species and a symposium focused on local ecological risk assessment topics (Florida Ecosystems: Case Studies and Relevance for Risk Analysis). ERASG will also have another symposium (Applications of Background Data in Ecological Risk Assessment) and three contributed paper sessions (Landscape and Watershed Scale Decision Analysis and Ecological Risk Assessment, Ecological Exposure Assessment, and Global Applications of Ecological Risk Assessment). There will also be ecological risk assessment poster contributions.

Please plan on attending our ERASG business meeting and mixer. It is a good way to meet your colleagues and find ways to contribute to the SRA. The ERASG business meeting and mixer will be scheduled for Monday, 5 December; the agenda for the

business part of the meeting will include installation of our new chair (Todd Bridges) and recognition for the winner of the ERASG Student Research Paper Merit Award.

If you have a contribution relevant to the ERASG column in the SRA quarterly newsletter or have some information that you would like to post on the ERASG Web site please send this information to Randy Ryti (rryti1@neptuneinc.org).

Exposure Assessment Specialty Group

Katy Walker, Chair

The 2005 SRA Annual Meeting in Orlando is coming up fast. We hope you'll join us for our annual mixer Monday night, 5 December, at which we will present this year's winner of the EASG Student Award for best paper in exposure assessment. Look for time and location details in the final program.

In case you have not taken a look at the full program, I hope to pique your interest by highlighting a few sessions that the EASG is sponsoring as well as several topics with intriguing exposure-assessment issues that caught my eye:

- Assessing and Managing Risks from Introduced Species
- Inhalation Exposures
- Indoor Environmental Exposures: Residential and Occupational Risks (symposium sponsored by EASG)
- Risk Analysis and Nanotechnology
- Assessment of Human Exposures and Health Risks from Consumption of Toxicants in Fish (double symposium sponsored by EASG)
- Biomonitoring
- A Worm's Eye View of Risk Analysis: Soil Gas and Vapor Intrusion
- Outdoor Air Quality Modeling and Analysis
- Food Safety Risk Assessment

In addition to these individual sessions, both poster sessions Tuesday are exclusively devoted to exposure assessment!

The field and practice of risk assessment truly benefits from the cross-fertilization of ideas from the many disciplines that must work together to understand the complex puzzles that we often face. Please join us in Orlando!



News and Announcements

NATO Advanced Research Workshop Computational Models of Risks to Infrastructure Primosten, Croatia, 9-13 May 2006

Simulation modeling of risk, a developing technology applicable to infrastructure, can help to counter terrorism threats. Sensitivity analyses of simulation models of infrastructure grids can reveal points for countermeasures to attacks. Risk analysis can provide a coherent terminology and a comprehensive mathematical framework for models of infrastructure risk.

The Advances Research Workshop (ARW) on Computational Models of Risks to Infrastructure will help to meet the need for improved security, stability, and coordination in NATO member and partner countries by exploring simulation technology and its application to the assessment of risks to infrastructure grids. The workshop will bring together experts and scientists to explore new models.

The workshop will include tutorial sessions, case study sessions, and poster sessions.

The workshop is sponsored by NATO Programme for Security Through Science and cosponsored by the Society for Risk Analysis and ENCONET International.

For more information go to www.enconet.hr/arw2006.

Planning Meeting Scheduled for Second World Congress on Risk

2005 SRA Annual Meeting participants in Orlando with an interest in the ongoing preparations for the Second World Congress on Risk are invited to attend a special planning session on Monday evening, 5 December, to be chaired by Robin Cantor.

SRA plans to hold the Second World Congress in 2008, and participants in this planning session will be asked to share their suggestions for potential cosponsors, marketing, and program design. Please check the final conference schedule for the room and time on Monday evening. If you are not attending the annual meetings but want to be involved, please contact Robin Cantor at rcantor@navigantconsulting.com.





Advertisements

Scientist Position

ChemRisk is a consulting firm providing state-of-the-art toxicology, industrial hygiene, epidemiology, and risk assessment services to organizations that confront public health, occupational health, and environmental challenges. ChemRisk is seeking applicants with training in toxicology, pharmacology, the environmental sciences, risk assessment, biomedical engineering, industrial hygiene, medicine, or health physics.

This position requires a bachelor's degree in environmental or toxicological sciences. Candidates with a PhD or master's degree are preferred. Candidates with a background in consulting are especially desired. Positions are available in the offices in San Francisco, California; Boulder, Colorado; Houston, Texas; and Pittsburgh, Pennsylvania.

Please send résumés to ChemRisk, 25 Jessie Street, Suite 1800, San Francisco, CA 94105, or email: hr@chemrisk.com, phone: 415-896-2400, fax: 415-896-2444, www.chemrisk.com.

University of Maryland Faculty Position (Position #105898)

Applications are sought for a tenure-track faculty position at Assistant or Associate Professor level in the area of risk-based design. Must hold a doctorate in engineering. Duties generally include developing externally funded research programs and teaching/developing courses. Submit a résumé, research/teaching statement, list of four references, and copy of three publications to Risk-Based Design Search Committee Chair, Mechanical Engineering, University of Maryland, College Park, MD 20742. Should be available to start in August 2006 and should apply by 15 November 2005 but the position will remain open until filled. EEO/AA employer. Women and minorities are encouraged to apply. Please see department Web site at <http://www.enme.umd.edu/departement/employment.html>.

Faculty Position in Risk Policy or Risk Communication

The Environmental Initiative (EI) at Lehigh University seeks to fill a tenure-track Assistant Professor position in environmental risk policy, management, communication or perception beginning in August 2006. Although the successful candidate's research field may be in any social science, his or her expertise must include environmental risk. The candidate should be prepared to teach courses in environmental risk management or risk communication or perception, with environmental policy applications. Particular fields of interest include national, comparative, or international environmental risk governance, decision processes including public trust and participation, understanding attitudes and perceptions toward environmental risks and benefits, theories and mechanisms for communicating about environmental risk, or environmental risk identification and response.

Complete information regarding the position and EI is at <http://www.ei.lehigh.edu>. Application materials should be sent in electronic and hard copy to Chair, EI Risk Search Committee, 105 Williams Hall, 31 Williams Dr.; Lehigh University; Bethlehem, PA 18015. Email to ei@lehigh.edu. Applicants must hold the PhD by time of appointment.

Review of applications begins 1 December 2005 and will continue until the position is filled.

Lehigh University is an equal opportunity/affirmative action employer and committed to recruiting and retaining women and minorities.

RISK newsletter and SRA Web Site Advertising Policy

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

Ads may be placed both in the *RISK newsletter* and on the Web site for \$375 for 150 words and \$100 for each additional 50 words.

Employment opportunity ads (up to 200 words) are placed free of charge in the *RISK newsletter* and on the SRA Web site. 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 four times a year. Submit advertisements to the Managing Editor, with billing instructions, by 30 December for the First Quarter issue (published early February), 30 March for the Second Quarter issue (early May), 30 June for the Third Quarter issue (early August), and 30 September for the Fourth Quarter issue (early November). Send to Mary Walchuk, Managing Editor, *RISK newsletter*, 115 Westwood Dr., Mankato, MN 56001; phone: 507-625-6142; fax: 507-625-1792; email: mwalchuk@hickorytech.net.



RISK *newsletter* is published by the Society for Risk Analysis

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Address Changes: Send to SRA@BurkInc.com

Deadline for RISK *newsletter* Submissions

Information to be included in the **First Quarter 2006** SRA RISK *newsletter*, to be mailed early February, should be sent to Mary Walchuk, RISK *newsletter* Managing Editor (115 Westwood Dr., Mankato, MN 56001; phone: 507-625-6142; fax: 507-625-1792; email: mwalchuk@hickorytech.net) no later than **20 December 2005**.



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 socio-economic 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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