



RISK *newsletter*

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SRA's Role in the Protection of Critical Infrastructure Systems

Genevieve S. Roessler

Society for Risk Analysis (SRA) Past President Yacov Haimés has identified a role for the Society in the emerging need to protect critical infrastructure systems in this country. "Critical infrastructures are at the core of the quality of life that we enjoy as individuals and as a nation," Haimés points out in an editorial in the April issue of *Risk Analysis: An International Journal*.

Haimés states that Executive Order 13010, issued on 15 July 1996 by President Clinton, established the President's Commission on Critical Infrastructure Protection in order to develop a national strategy for protecting infrastructures from various threats and to assure their continued operation.

Eight infrastructures were identified as critical because their incapacitation or destruction would have a debilitating effect on the nation's defense or economic security. These are telecommunications, electrical power systems, gas and oil storage and transportation, banking and finance, transportation, water-supply systems, emergency services, and continuity of government.

The problem, according to Haimés, is that "the incredibly fast advancement in computer and communications technology continues to displace the paper-based way we formerly planned, designed, constructed, operated, and managed the life cycles of these infrastructures. This trend has intensified their intra- and inter-dependency.

To address how SRA could have a role in the protection of these systems, Haimés first reviewed the Society's bylaws that were established when the Society was founded over two decades ago. The bylaws specify that the purpose of SRA is to foster and promote six major goals.

In his editorial, Haimés outlines how, for each of these goals, SRA can work to meet the emerging need to protect critical infrastructures. Among these he points out that the Society's publications have a responsibility to "seek ways to effectively enhance communication and interaction among our members, with the professional community at large, and with government officials on this need." One part of this plan will be to encourage more comments in the form of Letters to the Editor for publication in *Risk Analysis*.

Haimés also outlines in some detail the role that universities can play in this effort. "Could we expect a less-chaotic state of affairs in government and industry in dealing with risk assessment and management if university curricula were to treat this subject more seriously, methodically, and systematically?" he asks. Proposing that there be a more holistic pedagogical approach to risk assessment and management, he writes, "Then we would be able to expect an appropriate incorporation of risk assessment and management within a holistic management of our critical infrastructure systems."

Haimés outlines a number of different research efforts that the profession could

(Haimés, continued on page 2)

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SRA '99

Atlanta, Georgia

5-8 December

Marriott Marquis

For more information see page 6.



President's Message

Imagine my surprise when I fired up my e-mail recently and discovered the lead story of the 27 May 1999 edition of *Rachel's Environment & Health Weekly* (www.rachel.org), titled "The Waning Days of Risk Assessment." And here I thought the Society for Risk Analysis had such a promising future in a field that has, after all, officially been applied to public health and environmental decision making only since the 1980s. (Yes, I know, you engineers have been doing it a lot longer than that.) But according to Rachel, "20 years of actual practice have badly tarnished the ideal of risk assessment and have sullied the reputation of many a risk assessor." I had no idea that we had become a professional society for the sullied!

Rachel's would have us believe that "dangerous discharges have increased geometrically during the period when risk assessment has been the dominant mode of decision-making"—a factually incorrect statement in the United States and western Europe if ever there was one—and that "It is now obvious to most people that risk assessment is a key part of the problem, not an important part of any solution." Obvious to whom? Part of what problem? We are healthier and live longer than at any time in history. Our communities, businesses, and regulators have worked hard over the past 25 years to achieve air, water, food, and workplaces that are cleaner than ever before, and risk assessment helped us do so. Where is the problem? The public health community tells us that many of our remaining environmental health problems are a consequence of motor vehicle use, poor diet, and smoking. How is that a condemnation of risk analysis?

The author's bottom line was that risk assessment is on its way out as a way to "rationalize government decision-making" and the precautionary principle is on the way in. In other words, the precautionary principle is a "new paradigm" (author's words) that is "taking the place" of risk assessment. While it is certainly not true that the precautionary principle is new, it is true that the precautionary principle is threatening to take the place of risk analysis as the basis for regulatory decision making in a number of places, particularly in Europe. Increasingly, risk management decisions in Europe are being made on the basis of hazard, not risk, and the country of Sweden recently announced that it would no longer consider risk as the basis for regulation, relying on the precautionary principle instead. The European Commission is currently debating the appropriate role for the precautionary principle in consumer, public health, and environmental protection, and although it has not yet ruled out risk analysis, assuring that precaution does not trump science is an uphill battle.

The precautionary principle is not a substitute for risk-based decision making. Risk assessment, after all, provides just part of the information used to protect public health and the environment. The extent to which the precautionary principle is applied in decision making depends partly on the confidence that can be placed in a risk assessment but also on the nature and severity of the risk of concern, the likelihood that new data would change a risk management decision, the effectiveness and feasibility of the risk management action under consideration, and a wide variety of other considerations, like politics, public health, economics, and the law. The danger I see is that the precautionary principle will be used as license to ignore these other elements of risk management decision making.

While it's easy for us to laugh at fear-mongering articles like Rachel's, we must remember that people actually believe these things. Some people still think that industrial emissions are a leading cause of death and disease and that only zero risk is acceptable. These are people who believe that the precautionary principle should be used *instead of* risk analysis. There is a growing anti-risk sentiment and a movement to eliminate risk assessment as a basis for risk management. As members of the Society for Risk Analysis, we must recognize this and do our best to dispel the notion that risk assessment is a bogus discipline that threatens public and environmental health while the precautionary principle is the solution to all our problems. When used judiciously and constructively, the precautionary approach can be a useful component of decision making and priority setting. When used in the absence of considerations of risk, it promotes fear and politicizes science.



Gail Charnley

(*Haines, continued from cover*)

explore to specifically address the infrastructure protection needs. "As a professional society, we possess the talent, resources, energy, mechanisms, and institutional infrastructure that should enable us to make substantial progress in this quest," he challenges.

When asked how the Society could start activities toward the goal of critical infrastructure protection, Haines said that readers of this article will be making the first step—that of awareness of the situation. "The second step would be to read my complete editorial in the *Journal*," he advises. "Then we need to talk about this and come up with ideas as to how the officers, the speciality groups, and individuals in the profession can address the threats to the nation's critical infrastructures." ◇◇◇



Regulatory Risk Review

Inspiring Integration

David Clarke, Chemical Manufacturers Association

The views in this article are the author's own and do not necessarily reflect those of CMA.

"Creative, integrated strategies . . . are needed." We heard that in 1997 from the Commission on Risk Assessment and Risk Management in its report, *Framework for Environmental Health Risk Management*. Now, the U.S. Environmental Protection Agency's (EPA) Science Advisory Board (SAB), in the "peer review draft" of a report long in the making (and long overdue), is calling for "an integrated, outcomes-based environmental decision-making process that allows us to reduce aggregate risks efficiently and effectively." The draft report, *Integrated Environmental Decision-Making in the Twenty-First Century: Summary Recommendations*, marks the latest in a rapidly growing body of reports advocating integrated, holistic approaches toward environmental protection as the next evolutionary step beyond the single-chemical, single-risk, end-of-pipe controls that to date have characterized the environmental regulatory system.

Central to the draft recommendations of SAB's Integrated Risk Project Steering Committee is an "integrated environmental decision-making framework." As the SAB report itself notes, the framework bears significant similarities to the 1997 Commission framework, which contains six steps—defining problems/putting them in context, analyzing risks, examining options, making a decision, taking action, and evaluating results. All six steps involve stakeholder engagement. SAB's draft framework is more akin to EPA's ecological risk assessment framework in that it possesses three major steps—problem formulation, analysis and decision making, implementation and performance evaluation—but enough overlap exists that essentially the same message comes through the different detail: integration will make for more effective, and cost-effective, risk reduction.

Interestingly, SAB—like the Commission—also echoes themes underlying legislation introduced this year by Senators Carl Levin (D-Michigan) and Fred Thompson (R-Tennessee). The legislation, S. 746, The Regulatory Improvement Act of 1999, would require federal agencies when issuing major rules (those that

impose \$100 million in costs) to conduct a risk assessment and a cost-benefit analysis identifying both quantifiable and nonquantifiable benefits. While regulatory decisions would not have to be based on the analysis of whether the benefits of a rule "justify" its costs, agencies would nevertheless have to provide their complete analysis of risks, costs, and benefits and explain the basis for their decisions. The bill also calls for a comparative risk study and improvement of the methods associated with comparative risk analysis. Likewise, SAB's framework calls for "identifying the full range of benefits and costs, both monetized and non-monetized, associated with reduction of multiple risks" and for "considering a wide range of environmental risks simultaneously so that the seriousness of risks can be characterized relative to one another." In language that encapsulates much of what S. 746 seeks to achieve, SAB's draft report suggests that an integrated approach "should make clear to the public the reasoning behind environmental decisions and include a stronger system of public accountability . . ." We see a confluence of scientific advice and political goals.

One other crucial theme deserves highlighting. In its 1997 report, the Commission emphasizes the need to evaluate the effectiveness of risk management decisions, including by "comparing the actual benefits and costs to estimates made in the decision-making stage." SAB's draft framework also calls for "performance evaluation" and explicitly notes the framework's consistency with the Government Performance and Results Act, which requires federal agencies to evaluate the success of their programs in relation to the goals and objectives articulated in their strategic plans. Resources for the Future and other organizations that specialize in careful analysis have also emphasized the crying need for greater evaluation as an integral part of the environmental protection system.

Maybe it's time to integrate all of the thinking poured into reports by commissions, advisory committees, think tanks, and others who recognize a need for the environmental system to evolve. Maybe it's time for SRA to hold a conference to explore the implications of the integrated approaches for risk and decision analysis. Maybe it's time for me to stop my maybe musings. ◇◇

SRA Call for Award Nominations

The Society for Risk Analysis (SRA) Awards Committee invites nominations for the following 1999 awards:

The **SRA Distinguished Achievement Award** honors any person for extraordinary achievement in science or public policy relating to risk analysis.

The **SRA Outstanding Service Award** honors SRA members for extraordinary service to the Society.

The **Outstanding Risk Practitioner Award** honors individuals who have made substantial contributions to the field of risk analysis through work in the public or private sectors. The 1999 award will be for the private sector.

The **Chauncey Starr Award** honors individuals under the age of 40 who have made exceptional contributions to the field of risk analysis.

The **Fellow of the Society for Risk Analysis** award recognizes and honors up to one percent of the Society's membership whose professional records are marked by significant contributions to any disciplines served by the Society and may be evidenced by one or more of the following: (1) Recognized, original research, application, or invention, (2) Technical, scientific, or policy analysis leadership in an enterprise of significant scope that involves risk analysis in a substantial way, (3) Superior teaching or contributions to improve education and to promote the use of risk analysis that are widely recognized by peers and students, or (4) Service to or constructive activity within the Society of such a quality, nature, or duration as to be a visible contributor to the advancement of the Society.

Nominees for Fellow must have been SRA members for at least five years and must now be members in good standing.

Please submit nominations and a brief paragraph supporting each by **15 July 1999** to Ann Landis at the SRA Secretariat (1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101) and to John Graham, Awards Committee Chair (Center for Risk Analysis, Harvard School of Public Health, Boston, MA 02115).



SRA-E

Risk Analysis: Facing the New Millennium

The 1999 Annual Conference of the Society for Risk Analysis-Europe, Rotterdam, the Netherlands
10-13 October 1999

Louis Goossens

Over 250 abstracts for oral and poster presentations have been received. Five tracks (seven sessions each) are defined on Technological Risks; Methodology and Management; Risk Perception, Communication, and Trust; Decision Making Under Uncertainty and Policy Assessments; and Chernobyl and Food and Health Risks. Poster presentations will be specifically connected to the relevant sessions with oral presentations.

The 1999 Annual Conference will be opened on Monday morning by Mr. Opstelten (mayor of Rotterdam), followed by keynote talks on the learning process (education permanente): "Past and Future of Risk Analysis" (Professor Drottz-Sjöberg, SRA-Europe President), "Airport Risks" (Professor Knottnerus, Health Council of the Netherlands), and "Risk Analysis and Food Risks in an International Perspective" (Mr. Jouve, Commission of European Communities). The closing session on Wednesday has keynote talks on facing the new millennium: "The Future Risks for the Eastern European Countries" (Professor Rozenfeld, Ukraine) and "Water at Risk" (Professor Saeijs, the Netherlands), followed by a theme discussion on the future risk agenda.

For further information contact <sr ae1999@wtm.tudelft.nl> or visit our Web site (<http://www.wtm.tudelft.nl/~sra-e1999/>). ◇◇◇



Committees

Electronic Media Committee

Steve Brown, Webmaster

The SRA Web site (<http://www.sra.org>) once again accepted abstracts and symposium proposals for the annual meeting online, with modest improvements to address last year's complaints. Many symposium proposals and approximately 275 abstracts out of 380 were received online.

A bigger change is in the works: online registration for the meeting. The Electronic Media Committee is trying to implement a secure Web connection so that we can take credit card information along with the registration data. The planned schedule calls for completion well ahead of the deadline for early registration. An announcement will be made on the Web site, in the registration mailing, and (if timing is good) in the next RISK newsletter. The credit card capability will also make it possible to apply for and renew memberships online. (Currently, applications are accepted but a paper invoice must follow.)

I have announced my intention of stepping down as Webmaster at the end of 1999. A Y2K transition proposal has been submitted to the Council. When approved, we will be soliciting nominations for a replacement volunteer Webmaster, who will probably have a budget for paid support. Start thinking NOW about volunteering yourself or nominating someone else. ◇◇◇

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Chapter News

Lone Star Chapter

Theodora Overfelt, Secretary

The Lone Star Chapter (LSC) had its annual conference, "The New Endpoints in Risk Assessment," 26 October 1998 at the Four Seasons Hotel in Houston, Texas. The keynote speaker was Dr. John Graham, Director of the Center for Risk Analysis at Harvard School of Public Health. He spoke on "Making Sense of Risk." Dr. Fred Miller, Manager of Respiratory and Neurotox Research Program at Chemical Industry Institute of Technology spoke on the Importance of Dosimetric and Mechanistic Data in Assessing Carcinogenic



Dolores Lamb

Risk Using the U.S. Environmental Protection Agency's Draft Guidelines for Carcinogenic Risk Assessment: Formaldehyde as a Case Study." Dr. Dolores Lamb, Associate Professor of Cell Biology and Urology at the Baylor College of Medicine, and Dr. Srikanta Mishra, Senior Engineer at Duke Engineering and Services, presented talks on "Male Infertility: Are Men at Serious Risk?" and "Probabilistic Approaches for Health Risk Assessment," respectively. Thirty-five people attended the conference, which was followed by a dinner. Thanks to everyone who attended for making the conference a success!

This year's annual conference will be held in Austin, Texas, on Thursday, 21 October 1999. More details to follow!

The LSC had its first 1999 meeting in March at the University of Texas Health Science Center School of Public Health in Houston, Texas. Dr. Tom Connor, Associate Professor of Environmental and Occupational Health, enlightened us on health care worker risk from exposure to chemotherapy drugs.

In May the LSC responded to the Texas Natural Resource Conservation Commission's (TNRCC) request for comments on the Texas Proposed Risk Reduction Program (TRRP). The current TNRCC Risk Reduction Rules were promulgated in 1993 and the Proposed TRRP will replace the current Rules. As the premier technical society in Texas focused on the practice of risk assessment, the LSC reviewed the technical risk assessment approaches presented in the proposed TRRP in order to provide constructive recommendations to the TNRCC from the wealth of experience within the Chapter. The compiled comments were a product of the LSC as a whole and do not necessarily represent the opinions of every member of the LSC or of the Society for Risk Analysis.

Come join us at our next meeting in July in San Antonio, Texas, and welcome our new officers for the year: President

Arthur F. Eidson (IT Corp), President-elect Stephen King (Toxicology Incorporated), Secretary Theodora Overfelt (ERM-Southwest), Treasurer John Mikus (Texas Center for Applied Technology), and Councilors Laura Plunkett (Plunkett and Associates), B.C. Robison (ERM-Southwest), and John Mikus (Texas Center for Applied Technology).

Ohio Chapter

Jacqueline Patterson

The Ohio Chapter of the Society for Risk Analysis is planning a half-day "Topics in Ecological Risk Assessment" program with the U.S. Environmental Protection Agency's (EPA) National Center for Environmental Assessment. The program will be held on 13 July at the EPA's Andrew W. Breidenbach Environmental Research Facility in Cincinnati, Ohio. The preliminary agenda includes a discussion of "Directions in Ecological Risk Assessment" by Dr. Glenn Suter and "Placing Watershed Ecological Risk Assessment into a Decision Making Framework: More Than an Economic Valuation Problem" by Dr. Randy Bruins. For more information about the meeting, please contact Glenn Rice at 513-569-7813 (Rice.Glenn@epamail.epa.gov) or Jacqueline Patterson at 513-521-7426 (Patterson@tera.org).

Southern California Chapter

Steven T. Maher, President

The Twelfth Annual Workshop and Chapter Meeting of the Southern California Chapter of the Society for Risk Analysis (SCSRA) was held 27 May 1999 at the University of California-Los Angeles (UCLA). The theme, "Risk Assessment and Management in the New Millennium," included presentations, poster sessions, and panel discussions that encompassed a wide spectrum of risk assessment topics addressing Health and Environmental Risk, Aerospace Risk Analysis, and Accidental Risk Management.

Following a welcome and opening remarks by SCSRA President Steven T. Maher, PE CSP, Risk Management Professionals, Inc., and Professor Yoram Cohen, UCLA Center for Environmental Risk Reduction (cosponsoring the event), risk analysis professionals from California and the East Coast spoke on a variety of contemporary risk analysis topics: "Cassini Space Nuclear Risk Assessment with Emphasis on Treatment of Uncertainties" (Dr. Michael V. Frank of Safety Factor Associates), "Aerospace Range Safety-Risk Management Symposium Highlights" (Gail Sheaffer, The Aerospace Corporation), "Development of Space and Missile Launch Vehicle Failure Probabilities for the Air Force" (Dr. Lloyd L. Philipson—presented by Dr. James M. Hudson—ACTA, Inc.), "Risk Mitigation for the Reusable Launch Vehicle" (Gary Mueller, The Aerospace Corporation), "CA OES Y2K Initiatives & CalARP" (supported by Cara Roderick, California Office of Emergency Services) (Steven T. Maher, PE CSP, Risk Management Professionals), "Status



Srikanta Mishra



L to R: LSC 1998 President-Elect Arthur F. Eidson, Speakers Fred Miller and John Graham, LSC 1998 President Laura Plunkett.



Michael V. Frank

of Risk-Based Efforts at Cal/EPA" (Dr. Kimiko Klein, California EPA), "CAA 112(f) - Residual Risk" (Dr. Richard B. Belzer, Washington University in St. Louis), "MATES II (Multiple Air Toxics Exposure Study II)" (Tom Chico, South Coast Air Quality Management District), "Risk Communication in the New Millennium" (Captain Alvin Chun, U.S. Public Health Service), and "Risk Assessment and Toxicology Issues for California in the New Millennium" (Dr. John Froines, UCLA School of Public Health).



Annual Workshop Poster Session.

A new feature for this year's annual meeting and workshop was a poster session moderated by Dr. Lawrence B. Gratt, IWG, Inc. (Chapter President, 1999-2000 Program Year). An afternoon panel discussion, "Key Issues in Health and Environmental Risk Assessment in the New Millennium," was moderated by Gratt and Cohen. Panelists included Klein, Belzer, Chico, Chun, and Froines.

Special thanks go to the SRA Speaker's Bureau that sponsored Belzer to travel to the SCSRA Twelfth Annual Workshop and provide an "Overview of SRA National Activities." Special thanks also go to the Risk Management Professionals staff that labored diligently to organize and assemble the proceedings and UCLA staff that worked to ensure that all of the workshop arrangements were top quality.

Proceedings may be obtained by contacting Gratt (LGratt@aol.com) or Treasurer Thomas C. Meyers, PE CSP (Thomas.C.Meyers@aero.org).

The 1998-1999 Program Year was a very successful one for



**Richard
Belzer**

the SCSRA. In addition to the annual meeting and workshop, we organized another important and well-attended risk analysis workshop, "Practical Approach to CalARP/RMP Implementation in Southern California" (CalARP/RMP Specialty Workshop) and two dinner meetings, "Commercial Space Launch Risk Assessment" (Dr. Jon Collins) and "A Toxics Hot Spots Program Update: Process, Results and Benefits" (Dr. Dan Vasquez).

The SCSRA is very proud of the technical and leadership contributions that we have made to the promotion of risk assessment and management in the engineering and scientific community in Southern California, and we would like to thank all of the individuals who have supported our carrying this tradition of excellence into the 21st Century.

Northern California Chapter

Ronald Block, Secretary

The Northern California Chapter of the Society for Risk Analysis (NCCSRA) held its Spring General Meeting and dinner on 3 June at the University of California-Berkeley Faculty Club.

The invited guest speaker was Randy Sawyer with the Contra Costa County Department of Health Services. Sawyer has been the County coordinator with industry for communication of Risk Management Plans (RMPs) to the public. Contra Costa County, which is home to several oil refineries, has had several events involving refinery accidents and has drawn significant media attention. Sawyer discussed "Risk Management in Contra Costa County." In this context, we mean risk of accident. The event was well attended.

The NCCSRA Board is meeting every other month to plan the next meeting and workshop for the Chapter. If any SRA members happen to be traveling in the Bay Area, please feel free to attend our meetings and events. Contact me at <rblock@blockenviro.com> for an updated schedule. ◇◇◇

1999 Annual Meeting Information

The 1999 Society for Risk Analysis Annual Meeting will be held at the Marriott Marquis in Atlanta, Georgia, 5-8 December. With the theme "The Future of Risk Analysis in the 21st Century," the meeting will highlight the changing nature of risk, global and transboundary risk issues, new approaches to risk management, and trends in public values and democratic processes to be expected in the coming century.

Meeting Format: The meeting will encompass several types of scientific sessions including Poster Presentations, Oral Presentations, Symposia, and Workshops.

Exhibits: There will be an exhibition of risk-related and exposure-related products and services at the meeting. Companies or individuals may exhibit computer software, data bases, or other products. For further information on exhibiting, contact Lori Strong or Sue Burk at 703-790-1745, fax: 703-790-2672.

Book Exhibit: The meeting will once again include a combined book exhibit. For \$50 per title, books will be displayed and each attendee will be provided with information through our list of publications. The list will include prices, any discounts that may be offered, and ordering information. For more information or book reservation forms, contact Lori Strong at 703-790-1745, fax: 703-790-2672.

Programs: Preliminary programs will be mailed to members of the Society, as well as to those nonmembers whose abstracts have been accepted. Final programs will be available at the meeting in December. Preregistration and hotel reservation materials will be mailed as a part of the preliminary program.

Program Chair: Roger Kaspersen, 508-751-4605, fax: 508-751-4600, e-mail: rkaspers@black.clarku.edu

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News and Announcements

Project Learning Tree

Studying Risk at the High School Level

Most adolescents engage in all sorts of risky activities, from smoking and drinking to inline skating and snowboarding. In addition, many are faced with risks over which they have no control, whether it is living along a fault line, in a high-crime neighborhood, or near a chemical plant. But do these students have the appropriate skills and background knowledge to make decisions about the risks that they face every day? Are they learning the skills they will need to make decisions as professionals and as community leaders?



Participants at a Project Learning Tree educator workshop in Oregon.

In the fall of 1998, Project Learning Tree (PLT) launched its fourth high school curriculum module, "Exploring Environmental Issues: Focus on Risk." The module was developed under the guidance of an advisory board chaired by Society of Risk Analysis (SRA) member Terry Davies, Director of the Center for Risk Management at Resources for the Future. The goal of this module is to provide formal and nonformal educators with a series of activities to help students learn the rationale for and the mechanics of risk assessment, risk management, and risk communication as they apply to environmental and human health risks. Each activity focuses on developing skills: skills in problem solving, skills in decision making, and skills in following the methods of inquiry used by risk assessors.

Helping to teach about risk is new territory for PLT and as a result new audiences are being reached and new relationships are being formed. In an effort to connect with the professional risk community, PLT attended the 1997 SRA Annual Meeting in Washington, D.C. At that meeting PLT staff had the opportunity to share ideas with others in SRA who are interested in risk education. PLT staff also met with many of the SRA members who were involved with the development of the module, including Warner North, Michaela Zint, Robin Gregory, and Caron Chess.

In an effort to increase the visibility of the module among SRA members, PLT was part of a risk education symposium at the 1998 SRA Annual Meeting in Phoenix, Arizona (see *RISK newsletter*, First Quarter 1999, p.13). The symposium not only helped to get the word out about PLT and other risk education efforts, but also helped provide a forum for discussion for individuals in SRA who are committed to involving the Society in educational efforts at all levels.

PLT recognizes the value in forming a steady relationship with SRA. There is clear interest among SRA members in exploring risk education at the high school level, and PLT is interested in tapping into the expertise of the professional risk community to provide assistance at educator workshops and as resources for educators teaching students about risk.

As word of PLT's module "Exploring Environmental Issues: Focus on Risk" spreads through the extensive network of PLT

volunteers and the education community in general, there is a need for risk professionals to work with PLT trainers and educators at workshops and in classrooms across the country. To find out how you can get involved, please contact Adena Messinger at 202-463-2728 or <adena_messinger@plt.org>.

Project Learning Tree is an environmental education program sponsored by the American Forest Foundation, a not-for-profit conservation education organization. For more information on PLT please visit our Web site at <www.plt.org>.

Probabilistic Techniques in Exposure Assessment: A Handbook for Dealing with Variability and Uncertainty in Models and Inputs

Dr. Alison C. Cullen of the University of Washington and Dr. H. Christopher Frey of North Carolina State University have authored a recently published book that is the result of a special project of the Society for Risk Analysis (SRA). The book is titled *Probabilistic Techniques in Exposure Assessment: A Handbook for Dealing with Variability and Uncertainty in Models and Inputs* and is published by Plenum Press, New York (ISBN: 0-306-45956-6 for the hardcover version and 0-306-45957-4 for the softcover version).

The 352-page book contains a straightforward presentation of tools for addressing variability and uncertainty in exposure assessment. The major topics covered include when and why probabilistic analysis may be appropriate, general concepts and philosophical approaches in probabilistic analysis, approaches to dealing with uncertainty and related issues in the structure of models, a theoretical basis for many probability distribution models, methods for developing and critiquing probability distribution models based upon data analysis, methods for propagating uncertainty and variability through models, methods for identifying key sources of variability and uncertainty in a probabilistic analysis, and a detailed case study, as well as some special topics.

This book will be useful for many different audiences. While it is most specifically targeted at analysts who are involved in the development of probabilistic exposure assessments, this book will also be useful to people who are consumers of exposure assessments, including peer reviewers and risk managers. Furthermore, while the discussion of probabilistic methods is provided in the context of exposure assessment, the methods themselves are generalizable to many other fields and applications of quantitative techniques to the assessment of variability and uncertainty.

During the course of writing the book, Cullen and Frey met with numerous experts around the country to obtain input regarding methods and examples. In addition, the book was subject to several rounds of peer review throughout its preparation. Although most of the work was conducted as part of a special project of the SRA, with financial support from the American Industrial Health Council, U.S. Department of Energy, General Electric, and Harvard Center for Risk Analysis, the resulting book represents the work of the authors and not the views of the SRA.

The book can be ordered directly from the publisher. For details on how to order the book, visit <www.plenum.com> and search using the authors' names. ◇◇◇



Journal Notes

Risk Analysis: An International Journal

Elizabeth L. Anderson, Editor-in-Chief

This is the first "Journal Notes" column which we plan to provide on a regular basis to the RISK newsletter. In this column we will share news from the Journal and solicit your input on various topics.

In 1999, we placed special emphasis on the area of ecological risk assessment. For the first time, an Area Editor for Environmental/Ecological Assessment was named to fill this post: Bill van der Schalie from the U.S. Environmental Protection Agency. We are interested in identifying potential papers on special topics for publication. We would appreciate your papers and your thoughts on invited topics as we have increased our focus on this area.

A number of you have asked about the acceptance rate of submitted papers. Our data to date indicates about a 40 percent acceptance rate. At the beginning of 1999, we created a central file, which will be permanently maintained in our offices, for all papers which are submitted. We plan to track not only our acceptance rate, but also the number of papers received in each segment of our community, including health, engineering, social sciences, and ecological assessment and related information.

You will notice from the information in your latest Journal issue that we request that all papers now be submitted to our Managing Editor, Ann Walker. Each paper is logged and assigned to the most appropriate Area Editor to carry out the peer review.

The Editorial Board is focusing on several new topics. We will be including book reviews in future Journal issues. If you have recent publications that you feel should be covered in a book review for the Journal, I would appreciate having that information forwarded to me. In addition, we are interested in identifying key topics that you feel should be addressed either in an invited editorial or in papers. Please nominate candidate topics for future Journal issues.

In addition to the transition of Editor-in-Chief from Curtis Travis to me, we began 1999 with a new editorial team and with our publishing company, Plenum, being acquired by a new parent company, Kluwer, of The Netherlands. From the editorial perspective, we would like to thank everyone for their cooperation; we believe the transition has gone exceptionally well. In the beginning, transitions at our publishing house seem to have delayed reprints to authors, a problem that we can happily say we believe has been resolved. Also the April issue of the Journal inadvertently contains a notice that the Journal is available on the Web. This was a mistake for which our publisher apologizes. The decision to provide the Journal in electronic version will be addressed in the future.

We currently have a significant backlog of papers for our next several Journal issues and an impressive number of papers undergoing peer review. We look forward to receiving your papers, comments, and ideas for special papers.

Upcoming in the Journal, our June issue will contain an invited editorial from Nell Ahl, Director of the U.S. Department of Agriculture Office of Risk Assessment and Cost Benefit Analysis, which will focus on risk challenges facing the U.S. Department of Agriculture. In our August issue, you will find a special collection of "Nugget Papers" written by prominent members of the Society for Risk Analysis. This collection of papers was invited as a consequence of the 1997 SRA Annual Meeting chaired by Yacov Haimes. Also, we are looking forward to fall publication of a special collection of peer-reviewed papers on performance assessment for radioactive waste disposal. Of course, the appropriate disposal of large quantities of radioactive waste is currently a topic of wide national and international interest. This special issue promises to make an important contribution to this topic. We were fortunate to have D.R. Anderson of Sandia National Laboratories and J.D. Helton of Arizona State University organize this special collection. ◇◇◇

Call for Nominations

Area Editor in Social and Decision Sciences for *Risk Analysis: An International Journal*

The Publications Committee of the Society for Risk Analysis (SRA) is soliciting nominations for the Position of Area Editor in Social and Decision Sciences for *Risk Analysis: An International Journal*, which is the flagship publication of the Society.

The Area Editor in the Social and Decision Sciences will work with the editor-in-chief of the Journal, Elizabeth Anderson.

Nominations are to be submitted by **30 September 1999**. The Committee will present its recommendations to the SRA Executive Committee and then to the Council.

The area editor is responsible for having all submitted articles peer-reviewed in a timely manner, providing constructive feedback to authors who submit manuscripts, making decisions as to which articles are to be published, and forwarding those on to the editor-in-chief. The area editor shall also solicit manuscripts in his/her field for consideration by the Journal. Although the area editor is expected to have skills and responsibilities similar to those of the editor-in-chief, much greater emphasis will be placed on the candidates' specialized knowledge in social and decision sciences. The area editor typically serves for a three-year term. The position is effective 1 January 2000.

Nominations and statements of the nominees should initially only include the name and contact information for the nominee. At a later date, the Committee may request a short biographical sketch particularly highlighting any editorship or analogous experience, a brief statement about plans for the Journal, and resources that can be accessed to support Journal activities.

Submit all nominations no later than 30 September 1999 to Yacov Y. Haimes, Publications Committee Chair, University of Virginia, Center for Risk Management of Engineering Systems, Olsson Hall, Charlottesville, VA 22903.

E-mail submissions are acceptable (haimes@virginia.edu).

Submissions will be held in confidence by the Publications Committee and the Council and Secretariat as appropriate.



Specialty Groups

Dose Response Specialty Group

Elisabeth Reese, President

The Dose Response Specialty Group (DRSG) has had a very active first half of 1999 with many activities and initiatives. Issues discussed include cooperation and communication with other professional societies.

The purpose of the specialty group is (1) to facilitate the exchange of ideas and knowledge among practitioners, researchers, scholars, teachers, and others interested in dose-response assessment, (2) to encourage collaborative research on dose-response assessment, and (3) to provide leadership and play an active role in advancing issues related to dose-response assessment.

The DRSG supports collaborative activities with other specialty groups and disciplines within the Society for Risk Analysis (SRA). All SRA members are welcome to participate and share their views! Some recent and ongoing DRSG activities are summarized below.

DRSG Monthly Telecon Meetings

The DRSG holds teleconference meetings on the first Tuesday of every month (at 3:30-4:30 p.m. Eastern Time) to discuss and plan symposia, proposed workshops, open forums, and other DRSG-sponsored activities on dose response issues. New members and guests are welcome to join our meetings. To join a DRSG telecon meeting, simply call 202-260-7280. When asked for the four-digit code number, enter 0577#. The discussions are always provocative and interesting!

Second DRSG Open Forum (1 June 1999)

The DRSG sponsored an Open Teleforum on Tuesday, 1 June 1999, to discuss "Issues for Risk Assessment of Mixtures." The Open Forum featured guest speaker Resha M. Putzrath of the Georgetown Risk Group. In addition, there were invited comments from Paul M. Schlosser of the Chemical Industry Institute of Toxicology and Richard C. Hertzberg of the U.S. Environmental Protection Agency (EPA).

This was the second DRSG-sponsored Open Forum. The first Open Forum on "Policy and Professional Practice Issues Raised by the Union of 'Cancer' and 'Noncancer' Risk Assessment" (2 March 1999) was a big success! Because this article was in press at the time of the 1 June DRSG Open Forum, those interested in more information should contact Elisabeth Reese (phone: 202-334-1705; e-mail: ereese@nas.edu).

The DRSG will hold a third Open Forum on 2 November 1999. All are invited to participate!

DRSG-Sponsored Symposia for SRA '99

The DRSG will sponsor several fascinating new symposia at the 1999 SRA Annual Meeting in December.

There will be two symposia jointly sponsored by the Food/Water Safety Risk and Dose Response Specialty Groups on "Dose Reconstruction and Risk Assessment for Chemical, Physical, and Microbial Hazards." The goal of this pair of symposia is to provide more formal treatment of dose reconstruction: estimation of possible exposures or ingested doses of a

hazard associated with adverse health effects. The symposia organizers include Peg Coleman of the U.S. Department of Agriculture, Debra Street of the U.S. Food and Drug Administration, Resha M. Putzrath of the Georgetown Risk Group, and Charlotte D. Spires, a recent graduate of the Johns Hopkins University School of Hygiene and Public Health Risk Sciences and Public Policy Institute Certification Program.

A symposium on "Comparative Risk: Balancing the Risks and Benefits of Fish Consumption" will describe comparative risk and its significance to decision making. Furthermore, this symposium will highlight recent research, specifically a project to compare dietary risks of consuming certain contaminated fish. The symposium organizer is Jacqueline Patterson of Toxicology Excellence for Risk Assessment.

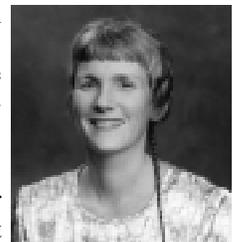
The DRSG is also considering a two-part symposium on "Gender Differences in Dose-Response for Common Biological Mechanisms." The purpose of this symposium would be to examine the gender-specific differences in dose-response characteristics of biological systems that are common to both males and females. The symposium organizers would include Scott Baker of the International Copper Association and Annie Jarabek and Rita Schoeny of EPA.

DRSG and Society of Toxicology Liaisons

This spring the DRSG discussed the possibility of future collaborative activities with the Society of Toxicology's (SOT) Risk Assessment Specialty Section (RASS). In February Clay Frederick, Chair of RASS, gave an overview of risk assessment activities within SOT. In March Clay appointed Michael L. Gargas of McLaren/Hart as a RASS liaison to the DRSG. The DRSG appointed Annie Jarabek of EPA as the DRSG liaison to RASS. The DRSG welcomes Gargas and Jarabek as new DRSG/RASS liaisons. The goal of this initiative is to promote future discussion and possible collaboration between the two groups.



Michael Gargas



Annie Jarabek

DRSG Specialty Group Contact

For more information on the DRSG or to become a member, please contact Elisabeth Reese, Food and Nutrition Board, Institute of Medicine, National Academy of Sciences, 2101 Constitution Ave NW, Washington, DC 20418; phone: 202-334-1705; fax: 202-334-2316; e-mail: <ereese@nas.edu>.

Ecological Risk Assessment Specialty Group

Bruce Hope, Chair

The Ecological Risk Assessment Specialty Group has been working since January to substantially increase the visibility of ecological risk assessment at the Society for Risk Analysis 1999 Annual Meeting in Atlanta. We are presently planning, subject to Committee approval, for a workshop, seven platform sessions, and one poster session, all devoted to ecological risk-oriented topics. The full-day workshop, titled "Introduction to Ecological Risk Assessment and Management," will

give participants (1) an introduction to the key components of the ecological risk assessment (ERA) process, (2) a review of current national (U.S. Environmental Protection Agency) and international (Canada, Europe) guidelines for conducting ERAs, and (3) an opportunity to gain familiarity with the ERA process and ERA decision making by participating in the innovative EcoChallenge simulation game developed by the Ecological Risk Assessment Committee of the American Industrial Health Council. There are also seven platform sessions currently anticipated: "Ecological Risks From Non-Native Invasive Species" (session chair: Richard Orr), "Ecological Risks At Larger Spatial Scales" (Wayne Munns), "Probabilistic Ecological Risk Assessment" (Dwayne Moore), "Scale Issues In Assessing Risks At Hazardous Waste Sites" (Charles Menzie), "Decision-Making With Ecological Risk Assessment" (Anne Fairbrother), "Population-Level Ecological Risk Assessment" (Wayne Landis), and "Southeastern Regional Session" (Jerry Stober). A poster session is also planned to accommodate ERA-oriented abstracts that do not fall in these topic areas or which wish to show large amounts of graphic or tabular information. Those who would like to join the Group and become more involved in our plans for Atlanta 1999 are encouraged to contact Bruce Hope by phone (503-229-6251) or e-mail (hope.bruce@deq.state.or.us).

Food/Water Safety Risk Specialty Group

Debra Street, Interim Secretary

The Food/Water Safety Risk Specialty Group focuses on risk analysis issues posed by hazards in the food and water consumed and used by humans and animals. The Food/Water Safety Risk Specialty Group plans to hold a workshop to immediately precede the Society for Risk Analysis Annual Meeting in Atlanta in December 1999. Don Schaffner has developed this technical workshop. It will emphasize Microbial Quantitative Risk Assessment, a new and rapidly evolving tool which has important implications for Hazard Analysis Critical Control Points (HACCP), food safety regulations, and research and teaching.

If you would like to know more about or join this specialty

group, please contact Don Schaffner, Secretary, by e-mail (Schaffner@aesop.rutgers.edu) or phone (732-932-9611, ext. 214).

Exposure Assessment Specialty Group

Kimberly Thompson, Chair

Dr. Kimberly Thompson became the new chair of the Exposure Assessment Specialty Group at the last annual meeting. The group voted to return Susan Youngren of Novigen Sciences, Inc., to the post for the year 2000.

The group recently initiated an effort to establish an Exposure Assessment Specialty Group annual student award and hopes to offer its first award at the SRA 1999 Annual Meeting. Please contact Thompson (617-432-4285 or kimt@hsph.harvard.edu) if you are interested in finding out more about the group or sponsoring the award. ◇◇◇

Specialty Group Contacts

Dose Response: Elisabeth Reese, President, phone: 202-334-1705, fax: 202-334-2316, e-mail: ereese@nas.edu

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Katy Kunzer, Secretary/Treasurer, phone: 703-741-5177, fax: 703-741-6177, e-mail: Kathleen_kunzer@cmahq.com

RISK newsletter and SRA Web Site Advertising Policy

Employment openings, books, software, courses, and events may be advertised in the 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. Camera-ready ads 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.

Members of SRA may place, at no charge, an advertisement seeking employment for themselves as a benefit of SRA membership.

The RISK newsletter is published four times a year. Submit advertisements to the Editor, with billing instructions, by 1 March for the First Quarter issue (April), 1 June for the Second Quarter issue (July), 1 September for the Third Quarter issue (October), and 1 December for the Fourth Quarter issue (January). Editor, RISK newsletter, RR1 Box 139H, Elysian, MN 56028; phone: 507-362-8958 or 507-362-4176; fax: 507-362-4513; e-mail: gnrsslr@frontiernet.net

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.

For additional information see the Web site at <www.sra.org/policy.htm#events>. Ads placed on the Web site will usually appear several days after receipt.



Advertisements

Registered Professional Environmental Engineer Seeks Senior-Level Position

Registered professional environmental engineer with an M.S. in environmental engineering seeks a senior-level position in the environmental risk management field.

Typical results would be:

- Increased market values of "Brownfield" properties.
- Decreased remediation costs at contaminated sites.
- Lowered capital expenditures for pollution control equipment.
- Reduced CERCLA and toxic torts liabilities.

I can assist executives in resolving their environmental risk business challenges by:

- Using refined assessment techniques to estimate representative realistic risk residuals.
- Negotiating clean-up goals for risk-based corrective action remediations.
- Incorporating statistical methodologies to obtain project-specific representative impacts.
- Assessing sites, properties, and facilities for potential liabilities.
- Estimating impacts and liabilities associated with the accidental release of hazardous materials,
- Determining clean-up cost allocations by estimating chemical-specific risk culpability.
- Supplying science and engineering based expert witness and litigation support.

I can make a significant contribution to multidisciplinary teams delivering both market-driven and value-added services to demanding high-end clients.

For more information contact Sam Rollans, P.E., MSCE, (message phone: 512-418-1255, e-mail: srollans@flash.net). To review résumé see <<http://www.flashnet.net/~srollans/homepage.html>>.

Analyzing Risk: Science, Assessment, and Management Risk Perception and Communication for Practitioners

The Harvard Center for Risk Analysis and the Harvard School of Public Health Center for Continuing Professional Education are pleased to present:

Analyzing Risk: Science, Assessment, and Management

4-7 October 1999 — Fee: \$1,195

Boston, Massachusetts

Agenda topics include: the role of toxicology in risk assessment, methods for quantitatively assessing variability and uncertainty, the science and statistics behind dose-response modeling for carcinogens, and methods for ranking risks.

Risk Perception and Communication for Practitioners

9-11 November 1999 — Fee: \$985

Boston, Massachusetts

Agenda topics include: how laypeople perceive risk, how the mass media cover risk, expressing quantitative information, and several case studies including Alar on apples, airbags and children, and MTBE in gasoline.

Please register early as space is limited.

For more information—or to register—please visit:

<http://www.hsph.harvard.edu/ccpe>

Phone: 617-432-1171

E-mail: contedu@hsph.harvard.edu

Sciences International Seeks Risk Assessors and Toxicologists

Sciences International, Inc., a consulting firm located in Alexandria, Virginia, that specializes in the assessment of the impact of substances released into the environment, is looking to increase its staff. We are seeking RISK ASSESSORS who possess an advanced degree in a scientific or engineering discipline; have at least five years of appropriate experience working on site-specific risk issues; are able to communicate clearly, both in written and oral form; and have excellent quantitative skills.

We also are looking for mid-level and senior-level TOXICOLOGISTS. These applicants should have a minimum of two years of experience in critically evaluating toxicology studies in support of human health hazard evaluations.

The successful applicants will have the opportunity to work on stimulating projects with experienced experts in the field. We offer exceptionally attractive benefits and salary and are an equal opportunity employer.

If interested, please send your résumé to:

Sciences International, Inc.

King Street Station

1800 Diagonal Road, Ste. 500

Alexandria, VA 22314

ATTN: Peggy Sheren

or psheren@sciences.com

17th International System Safety Conference ORLANDO '99

World's Foremost Conference for
System Safety Professionals

The Safety System Society is pleased to announce the 17th International System Safety Conference, 16-21 August 1999, to be held at the Holiday Inn International Drive Resort, 6515 International Drive, Orlando, Florida, USA.

Conference theme: *System Safety at the Dawn of a New Millennium*

Focus: System safety solutions for the future

Technical session, tutorial, and panel topics:

Software Safety	Aerospace/Aviation
Nuclear	Risk Assessment
Fault Tree Analyses	Simulation
Hazard Analyses	System Safety Management
Accident Investigation	Transportation
Human Factors	Standards Review

Conference information: www.system-safety.org or e-mail: ISSC1999@yahoo.com

Registration: Conference Planning Services, Inc., phone: 800-777-5333, fax: 907-851-8313





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Deadline for RISK newsletter submissions

Information to be included in the **Third Quarter 1999** SRA RISK newsletter, to be mailed at the beginning of October, should be sent to the Editor at the address above no later than **20 August**.

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Member News

Jenifer Heath

Dr. Jenifer Heath is pleased to announce that she has become an independent consultant, providing services in chemical product safety evaluation, litigation support, human health risk assessment, and dispute resolution. She had previously been the director of the world-wide risk assessment network (over 50 practitioners) of a large environmental consulting firm. Heath has over 12 years of experience in toxicology, pesticide registration, risk assessment for contaminated sites, and expert testimony. She is a member of the commercial panel of the American Arbitration Association.

Colin C. Ferguson

Professor Colin Ferguson, formerly Head of the Centre for Research into the Built Environment at Nottingham Trent University, has been appointed Professor of Environmental Engineering at the University of Nottingham, United Kingdom. He is also Chairman of Land Quality Management Ltd., an independent contract research and consultancy firm operating from Nottingham University.

Ferguson has recently acted as coauthor and coeditor of a two-volume work produced by the Concerted Action on Risk Assessment for Contaminated Sites in the European Union. This initiative, involving 16 European countries, was funded by the European Commission's Environment & Climate R & D Program and coordinated by the German Umweltbundesamt.

The two volumes are *Risk Assessment for Contaminated Sites in Europe, Volume 1: Scientific Basis*, ix + 165pp (1998) and *Risk Assessment for Contaminated Sites in Europe, Volume 2: Policy Frameworks* xi + 223pp (1999).

The second volume includes authoritative reviews from policy specialists in 16 European countries covering policy background, legislation, key technical guidance documents, and contract details for further information.

For ordering information contact Land Quality Press at + 44 115 9514099 or e-mail: <jane.burroughs@nottingham.ac.uk>.

Judy S. LaKind

In the last issue of the RISK newsletter we had an incorrect e-mail address for Dr. Judy LaKind. Her correct e-mail address is <judy@jesse.mts.jhu.edu>. LaKind has established LaKind Associates, LLC, which offers clients a comprehensive approach to management of risks associated with chemicals/products. ◇◇◇