



RISK *newsletter*

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Society for Risk Analysis 2001 Annual Meeting Review Seattle, Washington, 2-5 December “Risk Analysis in an Interconnected World”

New Officers

President Robin Cantor
President-elect Bernard D. Goldstein
Secretary Michael L. Dourson
Treasurer-elect Leslie J. Hushka
Councilor Ann Bostrom
Councilor John R. Fowle III
Councilor Jonathan B. Wiener

Award Winners

Distinguished Achievement Award

Howard Kunreuther
Suresh Moolgavkar

Outstanding Service Award

James D. Wilson

Chauncey Starr Award

Richard Reiss

Outstanding Risk Practitioner

Robert Budnitz

Fellow Awards

Joanne Linnerooth-Bayer
Timothy McDaniels
Thomas McKone
John Ahearne



September 11 and Anthrax Sessions

Best Paper Competition

Plenary Sessions

It's all in this issue of RISK *newsletter*!

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

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

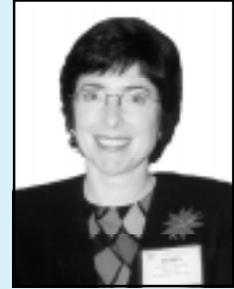
Members of SRA include professionals from a wide range of institutions, including federal, state, and local governments, small and large industries, private and public academic institutions, not-for-profit organizations, law firms, and consulting groups. Those professionals include statisticians, engineers, 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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President's Message

In these first years of the new millennium, no area of investigation and analysis could be more relevant than that of risk analysis. Our society has watched the terrain of high-priority risk problems shift dramatically with the September 11 and anthrax events. Our governments and nations have been transported to a world with heightened states of security and concern for protecting our "Homeland." The last issue of the *RISK newsletter* contained insightful statements from past and present Society for Risk Analysis (SRA) presidents on the implications of these events for risk analysis. Our journal, *Risk Analysis*, will be continuing this exchange of perspectives in forthcoming issues. In this issue of the *newsletter* (page 13), you are invited to share your own research or professional activities related to the September 11 and anthrax events in what I hope will be a continuing dialogue for the Society.



I am struck by how, in such a short time, we have become brutally aware of the interconnections of our lives and societies more generally. Prophetically, our annual meeting in Seattle emphasized the theme of interconnectedness. Over time, risk characterizations have evolved from models of probability and consequence to include factors reflecting the multidimensionality of risk. Further refinements have been added by considering the comparative context and the problem of multiple and complex exposures. Not surprising, research and practice is now broadening the scope of analysis to address how the interconnectedness and interdependencies of our systems serve to mitigate or exaggerate risks. Our annual meeting served to highlight these issues and provided a healthy exchange of ideas. There are several articles in this issue of the *newsletter* that summarize those exchanges.

Our annual meeting also provided an opportunity to do new things. We had special discussion sessions and brown-bag roundtables to increase opportunities for broader participation. Members formed a new specialty group which will focus on economics and benefits analysis. And we launched the Best Paper Competition to give the Society a new process to highlight and recognize the scholarship of participants at the annual meeting.

The annual meetings are also an important time to recognize people who contribute so much to the Society and to the field of risk analysis. In this issue, you can read about the outstanding award recipients who were recognized by the Society this year. To them I offer my congratulations and heartfelt thanks for their contributions.

Looking forward to what I hope to accomplish in the coming year, I have been working with the Council and other SRA members to plan a series of World Congresses on risk. The theme for the first World Congress is "Risk and Governance," which reflects the worldwide trend toward making better use of risk-oriented concepts, tools, and processes in public decision making and risk management. It is scheduled to be held in Europe in June 2003. SRA expects to be cosponsoring the Congresses with other scientific and professional societies interested in risk, and I invite interested SRA members to contact me to get involved and help with this international effort.

An equally important area of emphasis for the Council this year will be membership. Over the course of the year, we will be introducing a number of initiatives to increase membership. I call on all members of the Society to watch for membership updates and to do your part by simply sharing a little information about SRA with your colleagues. My experience is that they will find this Society, with its emphasis on interdisciplinary and comprehensive perspectives on risk, provides a distinct set of intellectual and organizational resources. Given current events, these resources are not simply useful for public or private decision making, they are essential.

Rob Carston



2002 SRA Officers

The Society for Risk Analysis (SRA) welcomed the following new officers at the 2001 Annual Meeting in Seattle:

President Robin Cantor

Robin Cantor is a Principal and Managing Director of the Environmental Practice of LECG, formerly Law and Economics Consulting Group. Her responsibilities at LECG include conducting complex economic, statistical, and risk analysis for litigation support and expert testimony, as well as managing a staff of internal and external environmental professionals. Prior to joining LECG in 1996, she was Program Director for Decision, Risk, and Management Sciences, a research program of the National Science Foundation (NSF), and a senior researcher at Oak



Ridge National Laboratory. Dr. Cantor is a past coordinator and grants manager for the NSF Human Dimensions of Global Change, the NSF Methods and Models for Integrated Assessment, and the NSF/EPA (Environmental Protection Agency) Decision Making and Valuation for Environmental Policy. While at NSF, Cantor was responsible for managing the review of 200-300 proposals annually and for coordinating the review judgments of dozens of experts from environmental, health, and social science fields.

Cantor has a faculty appointment in the Graduate Part-Time Program in Engineering of the Johns Hopkins University. She has a BS in mathematics from Indiana University of Pennsylvania and a PhD in economics from Duke University. Cantor's expertise includes several areas of environmental and energy economics, statistical modeling, risk management, public policy, and societal decision making. Her publications include refereed journal articles, book chapters, expert reports, and reports for federal sponsors, and she coauthored a book on economic exchange under alternative institutional and resource conditions.

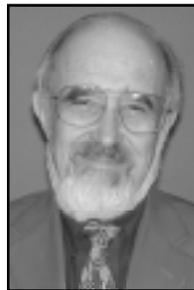
Cantor is a past Councilor of the Society for Risk Analysis (1996-99), during which time she was also chair of the Grants Management Committee. She served two years on the Conference Committee for the annual meetings and two years on the Awards Committee, and she more recently served on the organizing committee for the International Symposium on Risk and Governance. In 1999, she received the Outstanding Service Award from the Society for her work in organizing and raising funds for the Symposium and for highlighting risk education at the annual meetings, convening educators in the risk area (which has continued over several meetings), and establishing an education committee in the SRA Council to institutionalize this effort.

Cantor is a past president of the board of directors for MATRIX, The Business Center for Women and Minorities. She is a member of the American Economic Association and the Women's Council on Energy and the Environment. She serves or has served on science review and advisory boards for the Johns Hopkins University Graduate Part-Time Program in Environmental Engineering and Science, the National Center for Environmental Decision-Making Research, the Carnegie Council on Ethics and International Affairs, the National Oceanic and Atmospheric Administration, the National Academy

of Public Administration, and the Consortium for International Earth Science Information Network. In October 2001, she was appointed to the EPA Science Advisory Board, Research Strategies Advisory Committee. Cantor currently serves on the editorial boards of the *Journal of Risk Analysis* and the *Journal of Risk Research*.

President-Elect Bernard D. Goldstein

Bernard D. Goldstein is currently the Dean of the University of Pittsburgh Graduate School of Public Health. From 1986 to 2001 he was the founding director of the Environmental and Occupational Health Sciences Institute, a joint program of Rutgers University and Robert Wood Johnson Medical School, and was chairperson of the Department of Environmental and Community Medicine at the medical school from 1980 to 2001. Dr. Goldstein earned his BS in psychology at the University of Wisconsin and his MD at New York University School of Medicine.



Goldstein was Assistant Administrator for Research and Development at EPA from 1983 to 1985. He has been a member of numerous national, state, and local advisory committees related to environmental risk. These include serving as chairperson of EPA's Clean Air Scientific Advisory Committee, the National Institutes of Health Toxicology Study Section, and the Health Effects Institute Research Committee. He has been chairperson of six National Research Council Committees, including the Committees on Risk Assessment Methodology, on Biomarkers in Environmental Health Research, and on Evaluation of EPA Guidelines for Naturally Occurring Radioactive Materials. He was a member of the Presidential/Congressional Committee on Risk Assessment and Risk Management. For the Institute of Medicine (IOM) he has chaired the Section on Public Health, Biostatistics, and Epidemiology, has served on the IOM Committee on Environmental Justice, chaired two committees concerning the role of the health professional in environmental health, and is currently a member of the IOM Board of Health Sciences Policy and the IOM Roundtable on Environmental Health Sciences. He is on the Board of the International Life Sciences Institute, where he serves as scientific advisor to the Risk Science Institute, and he is a member of the Advisory Council of the Center for Communications, Health, and the Environment. His international experience includes chairing the Scientific Group on Methodologies for the Safety Evaluation of Chemicals and the Industry Panel of the World Health Organization Commission on Health and Environment. Currently, he is vice president of the Scientific Committee on Problems of the Environment. During this past year he has had sabbatical experiences working in Paris on aspects of the precautionary principle and risk analysis in environmental policy and in Malaysia as a visiting professor and consultant to a new academic environmental and occupational health program.

(Officers, continued on page 4)

(Officers, continued from page 3)

Goldstein is the author of over 200 articles and book chapters related to environmental health sciences, toxicology, risk assessment, risk communication, and public policy. He currently is coteaching a course on risk assessment at the Graduate School of Public Health. His honors include the 1999 Distinguished Achievement Award from the Society for Risk Analysis and membership in the Institute of Medicine.

Secretary Michael L. Dourson

Michael L. Dourson founded and now directs Toxicology Excellence for Risk Assessment (*TERA*). *TERA* develops partnerships among government, industry, and other interested groups to address risk assessments of high visibility, such as formaldehyde, perchlorate, chloroform, and soluble nickel, and was recently awarded a cooperative agreement with EPA to conduct peer consultation on high-volume chemicals. Prior to *TERA*, Dr. Dourson worked at EPA for 15 years, holding leadership roles such as chair of EPA's Reference Dose (RfD) Work Group, charter member of the EPA's Risk Assessment Forum, and chief of the group that helped create the Integrated Risk Information System (IRIS). He received four EPA Bronze Medals during his tenure and numerous other awards.



He has copublished more than 60 papers on risk assessment methods or assessments for specific chemicals. He has also coauthored over 100 government risk assessment documents, made over 100 invited presentations, and chaired numerous sessions at scientific meetings and independent peer reviews. He received a PhD in toxicology from the University of Cincinnati.

Dourson's professional elected positions included cofounder, past president, and councilor of the Dose Response Specialty Group of SRA and past president and councilor of the SRA Ohio Chapter. He has also been treasurer, vice president, and president of the American Board of Toxicology; cofounder, past and current president, and councilor of the Society of Toxicology's (SOT) Specialty Section on Risk Assessment; and councilor of the Ohio Valley Chapter of the SOT. He was also a member of the Food and Drug Administration's Science Board Subcommittee on Toxicology. Current assignments include a media resource specialist in risk assessment for the SOT, membership on the editorial board of three journals, vice chair of the NSF International Health Advisory Board, and a consultant to EPA's Science Advisory Board.

Treasurer-Elect Leslie J. Hushka

Leslie Hushka is Senior Toxicologist and Head of the Polymers and Adhesives Consulting Group at ExxonMobil Biomedical Sciences, Inc. She holds a BS degree in toxicology from Northeastern University and a PhD in pharmacology and toxicology from Purdue University. Prior to joining ExxonMobil Biomedical Sciences, Inc. (EMBSI), she held research, consulting, and program management positions with the Naval Blood Research Laboratory, General Electric Plastics, and the Chemical Manufacturers Association (now American Chemistry Council). At EMBSI, Hushka has research and

testing interests focused on mechanisms of dioxin toxicity, reproductive risk of plasticizers, and risk assessment methods aimed at children's unique susceptibilities.

Since joining SRA, Dr. Hushka has been a frequent volunteer assisting with many Society activities. She has served on the Program Committee and since 2000 has cochaired the Public Policy Committee with Dr. Jack Fowle. Under their leadership, SRA has continued its participation in a very successful series of Congressional briefings on emerging risk issues. The Congressional briefings program is jointly sponsored by, and organized with, the American Chemical Society. Hushka is an active participant in the SRA Risk Science and Law and Risk Communication Specialty Groups. She is also an active member of the Society of Toxicology, the American Association for the Advancement of Science, and the Mid-Atlantic Reproduction and Teratology Society. She has testified to the EPA Science Advisory Board and given frequent invited seminars at industry and academic institutions.



In her role as head of the EMBSI's Polymers and Adhesives Consulting Group, Hushka carries worldwide responsibilities for product safety, general health and environmental risk analysis, and science program management. In this role, as well in her experience with the American Chemistry Council, Hushka has acquired extensive experience in program planning and budgetary control.

Councilor Ann Bostrom

Ann Bostrom is an Associate Professor in the School of Public Policy at the Georgia Institute of Technology (Georgia Tech), where she teaches quantitative methods, environmental risk, and risk communication at both graduate and undergraduate levels. Dr. Bostrom's research is in risk perception, communication, and management and in cognitive aspects of survey methodology. Her research focuses on mental models of hazardous processes (how people understand and make decisions about risks) and has been funded by the National Science Foundation (NSF), National Institutes of Health, EPA, and the Centers for Disease Control and Prevention.



Bostrom holds a BA in English from the University of Washington and an MBA from Western Washington University. Before beginning her doctoral studies, she worked as a summer intern in the Economic Statistics Division of the U.S. Bureau of the Census. She completed her PhD in public policy analysis at Carnegie Mellon University in 1990. From 1999 to 2001 Bostrom took leave from Georgia Tech to serve as one of two directors for the Decision, Risk, and Management Science Program at the NSF. In this capacity she represented the risk research community at NSF as well as in interagency meetings.

A member of the Executive Committee of the Board of Scientific Counselors, which advises the Office of Research and Development of EPA, Bostrom has also been a member of the Advisory Committee for the Harvard Center for Risk Analysis.

Bostrom is currently chair of the Risk Communications Specialty Group in the SRA. Prior to this she was secretary-treasurer of the Specialty Group for many years. Bostrom has also served on the nominations, awards, and program planning committees of SRA. In 1997 she was awarded the SRA Chauncey Starr Award for a young risk analyst.

Councilor John R. "Jack" Fowle III

Jack Fowle is the Deputy Director of EPA's Science Advisory Board staff. He manages staff operations and serves as the Designated Federal Officer for the Research Strategies Advisory Committee. His efforts focus on risk assessment and the use of science to inform policy. He is a member of EPA's Risk Assessment Forum and the Toxicology Forum.



Active in a variety of activities with the SRA, Dr. Fowle served on the Conferences and Workshops Committee from 1997 to 1999 and developed the 1998 SRA forum "Protecting Sensitive Groups as Mandated by the FQPA and the SDWA: Can Science Meet the Challenge?" It was the most highly attended SRA forum held up to that date.

Since 1998 he has chaired the Public Policy Committee, during which time SRA has cosponsored 11 luncheon briefings to inform Congress about the use of risk analysis to inform decision making.

Fowle was detailed from EPA to the U.S. Senate as Senator Daniel Patrick Moynihan's Science Advisor from January 1992 until December 1994. Before joining Senator Moynihan's staff, Fowle spent three years in Research Triangle Park, North Carolina, as Associate Director of EPA's Health Effects Research Laboratory. He first came to EPA in 1979 when he joined the Office of Research and Development's Carcinogen Assessment Group and has served in a variety of other capacities since then, including helping to develop the Agency's policies and guidelines for cancer risk assessment and mutagenicity risk assessment. He managed the development of EPA's initial Biotechnology Research Program in 1983 and 1984 and was subsequently detailed to Congressman Gore's Investigation and Oversight Subcommittee, Committee on Science and Technol-

ogy, as a Science Advisor on Biotechnology Issues.

Fowle received both his baccalaureate and doctoral degrees in genetics from George Washington University in Washington, D.C.

Councilor Jonathan B. Wiener

Jonathan Wiener is Professor of Law at Duke University School of Law, Professor of Environmental Policy at the Nicholas School of the Environment and Earth Sciences at Duke, and the Faculty Director of the new Duke Center for Environmental Solutions. In 1999 he was a visiting professor at Harvard Law School.

Dr. Wiener's research and teaching seek to connect the science, economics, and law of risk regulation, both in the United States and globally. He has written on risk-risk tradeoffs, the precautionary principle, global climate change, regulatory reform, conceptions of nature in law, biotechnology policy, hazardous waste cleanups, and related topics.

Before coming to Duke in 1994, Wiener worked on the science, economics, and law of risk in both the first Bush and Clinton administrations. He served on the senior staff of the White House Council of Economic Advisers in 1992-93, as counsel to the director of the White House Office of Science and Technology Policy in 1992, and as special assistant to the head of the Environment and Natural Resources Division of the U.S. Department of Justice in 1989-91.

Wiener clerked for Judge Stephen G. Breyer on the U.S. Court of Appeals in Boston in 1988-89 and for Chief Judge Jack B. Weinstein on the U.S. District Court in New York in 1987-88 (with special attention to the *Agent Orange* case).

In 1998, Wiener served as president of the SRA Research Triangle Chapter. He has served on the SRA's Nominating Committee and currently serves on the Executive Committee of SRA's Risk Science and Law Specialty Group. He is a member of the Editorial Board of *Risk Analysis: An International Journal*.

He received his AB magna cum laude (1984) and his JD cum laude (1987) from Harvard University, where he was an editor of the *Harvard Law Review* in 1985-87. <<>



Call for Nominations for SRA Officers

The Society for Risk Analysis Nominating Committee invites nominations for the following offices in the Society's 2002 elections:

President-elect

Three Councilors

The Councilors serve for three years and are ineligible for reelection until one year has elapsed following the completion of their terms.

Please submit nominations with a brief paragraph supporting each by 2 July 2002 to Secretariat, Society for Risk Analysis, 1313 Dolley Madison Blvd., Suite 402, McLean, VA 22102; phone: 703-790-1745; fax: 703-790-2672; email: SRA@BurkInc.com.



2001 Award Winners

Distinguished Achievement Award

The Society for Risk Analysis (SRA) Distinguished Achievement Award honors any person for extraordinary achievement in science or public policy relating to risk analysis. This year two Distinguished Achievement Awards were presented: to Dr. Howard Kunreuther for his distinguished contributions in the field of the risk of extreme events, their perception, and the ultimate management of such risks and to Dr. Suresh Moolgavkar for his distinguished scholarly work and research to the benefit of humanity.

Howard Kunreuther

Dr. Howard Kunreuther, Cecilia Yen Koo Professor of Decision Sciences and Public Policy and Management of the Wharton School at the University of Pennsylvania, codirects the Wharton School's Risk Management and Decision Processes Center. He has been a world leader in the study of individual and societal response to low-probability, high-consequence events such as natural and technological disasters such as a severe earthquake or a chemical accident. In particular, he has provided important new insights into why residents and firms do and do not protect themselves adequately against such events by investing in loss-reduction measures and purchasing insurance coverage. He works closely with the private and public sector organizations in an attempt to develop programs and policies that reflect our understanding of the interaction by relevant stakeholders and their decision processes.

An SRA Fellow, Kunreuther also has been the recipient of the SRA Distinguished Service Award. The author of over 100 publications, Kunreuther is currently Associate Editor of *Risk Abstracts*, *Risk Analysis*, *Journal of Risk and Uncertainty*, and *Risk, Decision, and Policy*. Kunreuther earned an AB in economics from Bates College and a PhD in economics from Massachusetts Institute of Technology.



In his award acceptance speech, "Risk Analysis and Risk Management in an Uncertain World," Kunreuther addressed the challenges and opportunities for the SRA to develop strategies for coping with the fallout from the unprecedented events of September 11 and the recent bioterrorist threats. "The terrorist activities have raised a set of issues regarding how we deal with events where there is considerable ambiguity and uncertainty on the likelihood of their occurrence and their potential consequences," he noted. SRA members are in an excellent position to address the following three questions: (1) How can we link the tools of risk assessment and our knowledge of risk perception to develop risk management options that are likely to be successfully implemented? (2) What is the changing role of the public and private sectors in dealing with these risks? and (3) How can we utilize lessons from dealing with past extreme events in helping to plan for the future?

"The problem is," Kunreuther continued, "as one moves from events where there is considerable historical and scientific data on which to base estimates to those where there is greater uncertainty and ambiguity (for example, terrorism) there is a much greater degree of discomfort in undertaking risk assessment. The challenge is to indicate what the probabilities are of these scenarios and then to characterize their consequences."

However, when it comes to risk perception, people don't think probabilistically; emotion plays a big role. So, how does this affect the development of risk management strategies? Some of the questions that emerge are (1) How much should we be willing to pay for small reductions in probabilities that are already extremely low? and (2) How much should we be willing to pay for actions that are primarily reassuring, but may do little to change the actual risk? Kunreuther suggested that more attention needs to be devoted to giving people perspective on

the very small likelihood of the terrible consequences that their minds can imagine. This form of reassurance should be able to reduce worry and fear and enable us as a society to spend money more wisely.

Kunreuther then focused on the role of the public and private sectors in dealing with uncertain events such as terrorism. Prior to September 11 the private sector was expected to finance protective measures rather than relying on the government. He pointed to the airline industry as an example and said the government now feels it has to bail out companies on the verge of bankruptcy. An added question being posed after the World Trade Center disaster is the appropriate role of government in developing regulations and standards to provide adequate protection against events where there is a chance of contamination. He again used the airlines as an example by pointing out that there is very little incentive for US Airways or any airline company to install a checked baggage security system on its own if none of the other airlines have undertaken this step. It could be contaminated from the bags of passengers who check in on other airlines and then transfer to US Airways to complete their flight—hence the requirement that all airlines have a checked baggage security program to screen bags for bombs.

"We have always faced many challenges in dealing with low-probability, high-consequence events," Kunreuther concluded. "I am confident that the Society will play a leadership role in bringing together risk assessment, risk perception, and risk management in ways that will produce substantial benefits to our society. I believe it would be useful for the SRA to develop a set of recommendations for short-term and long-run strategies for linking science with policy to deal with extreme events such as terrorist activities."

Members of the 2001 Society for Risk Analysis Awards Committee included Chair Yacov Haimes, Elizabeth Anderson, John Garrick, Lester Lave, and Paul Slovic.

Suresh Moolgavkar



Dr. Suresh Moolgavkar is a Member of the Fred Hutchinson Cancer Research Center and Professor of Epidemiology and Biostatistics at the University of Washington. He is internationally known for his work on dose-response modeling, epidemiology, and statistical analyses related to environmental concerns. Perhaps he is best known as the principal author of the original paper that introduced the two-stage clonal expansion model of carcinogenesis, a biologically based model that has been widely used for estimating low-dose effects of carcinogens.

Moolgavkar is a prolific contributor to the peer-reviewed literature. Most recently, it is his model that is cited in the current draft Environmental Protection Agency carcinogen risk assessment guidelines as the preferred basis for revising the approaches of the last 25 years which have relied on the linear no-threshold low-dose response relationship to describe risk associated with carcinogens. The Area Editor for Health for *Risk Analysis: An International Journal*, Moolgavkar has an MBBS (MD) from Bombay University and a PhD in mathematics from Johns Hopkins University.

“Biostatistics is a new buzz word,” Moolgavkar stated in his award acceptance speech, saying his hope is that the use of this field can continue to shed light on risk assessment. “However, there is a fundamental misunderstanding,” he emphasized, “that the highly complex process of carcinogenesis, which is dependent on an extremely intricate network of molecular cellular processes, can ever be simulated realistically with highly simplified (albeit very sophisticated) computational models.” He said the goal of modeling is, in fact, quite the opposite: the question is not whether the model is correct but whether it is useful. “It is not the goal of modeling to provide a complete and comprehensive description of biological processes, but to isolate and raise questions about the essential features of the processes,” he explained. “The correct questions are ‘Is the model useful, can it make testable predictions, and can it provide new insights into data?’”

The three essential steps in developing a model that were outlined by Moolgavkar are (1) formulation of the biological problem, (2) translation of the biology into a mathematical model (deterministic or stochastic), and (3) development of the appropriate statistical and computational tools to analyze data using the model.

He explained the current basic assumptions in multistage carcinogenesis, starting with the accumulation of critical mutations in a stem cell through the promotion of the cells to a malignant state either spontaneously and/or in response to en-

dogenous or exogenous promoters. He then discussed two examples of ways models can be used to provide insights into the data. In the first, the study of lung cancer in a cohort of Chinese tin miners, Moolgavkar showed how analyses of data using multistage carcinogenesis could explicitly incorporate detailed pattern of exposure of each individual to each carcinogen. His second example was the analysis of colon cancer incidence in the National Cancer Institute’s SEER (Surveillance, Epidemiology, and End Result) database. In this, the largest cancer registry in the United States, covering over 10% of the population, multistage models were fit to the incidence of colorectal cancer in the SEER registry over the period 1973-1996.

Pointing out the implications of modeling for risk assessment, Moolgavkar explained that “you predict risk for detailed patterns of exposure, not just cumulative exposure because for carcinogens it is not sufficient to consider just the ‘area under the curve.’” He said that in following this approach you can “derive a mechanistic understanding of aspects of the carcinogenic process and the role of specific carcinogens and anticarcinogens by putting mechanistic models back-to-back.” The methods need to incorporate errors in exposure estimates and interindividual differences in sensitivity, he added.

“Any kind of understanding that you can get of the carcinogenesis process is going to benefit risk analysis,” Moolgavkar concluded.

SRA Call for Award Nominations

The Society for Risk Analysis (SRA) Awards Committee invites nominations for the following 2002 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 2002 award will be for the public 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 June 2002** to Kris Berkebile at the SRA Secretariat (1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101; fax: 703-790-2672; email: KBerkebile@BurkInc.com) and to Gail Charnley, Awards Committee Chair (HealthRisk Strategies, 826 A St. SE, Washington, DC 20003; phone: 202-543-2408; fax: 202-543-3019; email: healthrisk@aol.com).

Outstanding Service Award

James D. Wilson

James D. Wilson was honored with the Outstanding Service Award for extraordinary service to the Society for Risk Analysis (SRA).



Serving as SRA President in 1993, Dr. Wilson was named a Fellow of the Society in that year. He was a member of the governing Council from 1989 to 1991, chair of the Liaison Committee from 1987 to 1991, and chair of the Publications Committee in 1994.

He holds an AB from Harvard University and a PhD in organic chemistry from the University of Washington.

Wilson is a Senior Fellow and leader of the risk analysis program in the Center for Risk Management at Resources for the Future (RFF). An organic chemist by training, he spent 29 years with the Monsanto Company in research, research management, and then health and environmental policy. His research has focused on structure-activity relationships, including environmental chemistry broadly, "dioxin" and related chemicals, relation of chemical structure to physical and physiological properties, the use of science in decision making, and the influence of organizational structure on decision making. His current research at RFF concerns the development and use of standardized risk assessment practices, particularly default options. His tenure at Monsanto included managing the interface between one business unit and product regulatory agencies.

Chauncey Starr Award

Richard Reiss

Upon receiving the Chauncey Starr Award, which honors individuals under the age of 40 who have made exceptional contributions to the field of risk analysis, Dr. Richard Reiss was called one of the rising stars in the field of risk assessment and in SRA and an active and outstanding member in the risk analysis field. He is currently Managing Editor of *Risk Analysis: An International Journal* and is head of the SRA Exposure Assessment Specialty Group. His degrees include a BS in chemical engineering from the University of California Santa Barbara, an MS in environmental engineering from Northwestern University, and a Doctor of Science in environmental science and engineering from Harvard University, School of Public Health.



Reiss is a Project Director at Sciences International, Inc., and an experienced environmental scientist with significant consulting and research experience. He has expertise in both air quality and chemical risk assessment. He has conducted research in urban and indoor air quality and provides consulting services to governmental and industrial organizations on urban air quality, industrial hygiene, and air toxics issues. Specifically, Reiss was the data manager and study coordinator for a major air pollution transport study in the Northeast, and he was an investigator for several air pollution epidemiologic studies involving analysis of measurement data, statistical analysis, and the development of a Monte Carlo exposure model.

Reiss also consults with numerous organizations and com-

panies on chemical fate and transport and on human and ecological exposure. He has conducted risk assessments, data analyses, probabilistic exposure modeling, and environmental exposure modeling for pesticides and other chemicals. He has used a variety of models in conducting occupational and ecological risk assessments for pesticides and industrial chemicals and has performed statistical analyses, including dose-response modeling to evaluate chemical toxicity. He has conducted numerous human exposure and risk assessments for industrial clients for pesticides, consumer products, and other chemicals.

Outstanding Risk Practitioner Award

Robert J. Budnitz

Robert J. Budnitz received the Outstanding Risk Practitioner Award for his substantial contributions to the field of risk analysis through work in the private sector. Dr. Budnitz is a major contributor to understanding how to analyze the contribution to technological risk of natural phenomena, particularly earthquakes. He also has an international reputation in effectively bringing the risk perspective to the safety review of industrial complexes of all types.



The President of Future Resources Associates, Inc., Budnitz is a distinguished scholar and participant in the development and application of the methods of quantitative risk assessment, principally to the fields of nuclear power and radioactive waste. He is a major contributor to the treatment of external hazards in probabilistic risk assessment of nuclear power plants. He has been cited for research, leadership, and oversight in the development and application of the risk sciences for the nuclear industry.

Budnitz holds a BA in physics from Yale University and an MA and PhD in physics from Harvard University. He is a Fellow of SRA, the American Nuclear Society, and the American Physical Society.

Fellow Awards

The SRA Fellows Award recognizes and honors Society members 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.

Joanne Linnerooth-Bayer

Joanne Linnerooth-Bayer is an expatriate American living in Vienna, Austria, where she is the leader of the IIASA (International Institute for Applied Systems Analysis) project on "Risk, Modeling and Society." Linnerooth-Bayer is committed to interdisciplinary "risk" research on a truly international scale. She has recently coedited a book on transboundary risk

management, and the most current focus of her project is global change and the risks of catastrophic disasters. The project is investigating options for improving the financial management of catastrophic risks in the developing world. Linnerooth-Bayer's personal interest is equity: how societies share and transfer risks. Based on this interest, she has recently received funding for a European-wide project on a new area of risk research—pension reform—and she is part of a team conducting focus groups as a method for involving the public.



Linnerooth-Bayer is an associate editor of the *Journal for Risk Research* and on the editorial board of *Risk Analysis* and *Risk Abstracts*.

Timothy McDaniels

Timothy McDaniels has been interested in risk analysis for over 20 years, since he first read the work of Paul Slovic and Baruch Fischhoff. He completed his PhD in 1990 from Carnegie Mellon University, where he worked with Granger Morgan and Lester Lave. Since 1990 he has been a faculty member at the University of British Columbia, where he directs the Eco-Risk Research Unit and teaches in three interdisciplinary graduate programs.



Dr. McDaniels served as SRA Secretary from 1998 to 2001. During that time he also served as Chair of the Education Committee and was a member of the Publications Committee, the Editor Search Committee, and the Year 2000 International Symposium Organizing Committee.

McDaniels is the contributing author of a proposal to establish regional university-based centers for research and teaching in risk analysis and is the author of the "Risk Education Resources" column in the *RISK newsletter*. He is currently editing a book with Mitchell Small for Cambridge University Press based on the 2000 Symposium on risk and governance.

Thomas McKone

Former SRA Council Member Thomas McKone is a supporting, active member of the Society. He is best known for his achievements in the exposure assessment field. He has been president of the Exposure Assessment Specialty Group, is on the Editorial Board of *Risk Analysis: An International Journal*, and is a tireless author of books and papers in the peer review literature.



Dr. McKone holds a BA in chemistry from St. Thomas College in St. Paul, Minnesota, and an MS and PhD in engineering from the University of California, Los Angeles.

An Adjunct Professor and Researcher in Environmental Health Sciences at the School of Public Health at the University of California, Berkeley, McKone is also Senior Scientist in the Environmental Energy Technologies Division at Lawrence Berkeley National Laboratory.

John Ahearne

John Ahearne is a longtime member of SRA, most recently serving as 2001 President of the Society. Dr. Ahearne earned his bachelor's degree and MS from Cornell University and his PhD in physics from Princeton. An Adjunct Professor of Civil and Environmental Engineering at Duke University, he is a member of the National Academy of Engineering; a Fellow of the American Academy of Arts and Sciences, American Physical Society, and American Association for the Advancement of Science; chair of the National Research Council Board on Radioactive Waste Management; and a member of more than 16 National Research Council studies. He is also a member of advisory groups for Los Alamos National Laboratory, Livermore National Laboratory, Lawrence Berkeley National Laboratory, and Pacific Northwest National Laboratory. A former Air Force officer, Ahearne is a member of several Department of Energy and General Accounting Office advisory groups.



Best Paper Competition

Best Paper Awards were given at the SRA annual meeting for the first time this year. The winners of the competition were:



Nancy Judd, University of Washington
A Model for Optimization of Biomarker Testing Frequency to Minimize Disease and Cost: Example of Beryllium Sensitization Testing
Coauthors: WC Griffith, TK Takaro, and EM Faustman, University of Washington



Katherine McComas, University of Maryland
Public Meetings and Risk Amplification: A Longitudinal Study

Daniel Wartenberg, University of Medicine and Dentistry of New Jersey, Robert Wood Johnson Medical School
Does Distributional Shape Matter in Monte Carlo Analysis?
Coauthors: G Harris, UMDNJ School of Public Health; B Binkowitz, Merck Co.



Maria Leung, UVA Center for Risk Management of Engineering Systems
Risk Modeling, Assessment, and Management of Lahar Flow Threat
Coauthors: JR Santos and YY Haimes, UVA Center for Risk Management of Engineering Systems





2001 SRA Annual Meeting

Monday Plenary

The Role of Risk Analysis in Understanding Bioterrorism

The Society for Risk Analysis (SRA) annual meeting Monday Plenary Session speaker notified Program Chair Robin Cantor several weeks before the meeting that he couldn't speak as planned because of changes to his schedule, necessitated in part by the events of September 11. In stepped SRA Councilor and Drexel University Professor Dr. Charles Haas to save the day with his timely and provocative talk, "The Role of Risk Analysis in Understanding Bioterrorism." To a roomful of attentive listeners, Haas provided an overview of the bioterrorism problem and outlined a number of areas to which members of the SRA could usefully contribute. "Risk professionals can contribute much to the understanding of and solutions to bioterrorist events and threats," Haas said. To assist in the understanding for his listeners, he first defined what is meant by bioterrorism, gave examples of potential agents, and listed the characteristics of "good bioweapon candidates."

"There have been nearly 200 prior events, including biocriminal incidents in addition to bioterrorism episodes," Haas said. "A number of these have been ricin toxin and anthrax hoaxes, which can also be costly."

To further the education of the audience about bioterrorism, Haas reviewed the barriers that a terrorist might encounter in obtaining, growing, weaponizing, and delivering the right agent.

He continued with a discussion of how risk analysis approaches could be brought to bear on bioterrorism. He discussed techniques of assessment, mitigation, protection, decontamination, and medical response. He also discussed "real risks" versus perceived risks.

Referring to Paul Slovic's response, "Terrorism as Hazard: A New Species of Trouble," which appeared in the Fourth Quarter 2001 RISK newsletter cover story about September 11, Haas said that "all of Paul's points in that article help us to understand why the recent anthrax events have been so high in the public consciousness." Haas also discussed Slovic's previous works on risk amplification. He listed four perceptions about risk that the public might have: (1) a new and possibly catastrophic risk has emerged, (2) the managers try to conceal the risks: they cannot be trusted, (3) the risk managers are not in control of the hazard, and (4) the experts do not understand the risk or do not understand the long-term cumulative effects of chemicals.

For his "coda," Haas stated that (1) the current risks from "normal" exposure to microorganisms far exceeds those from bioterrorism, (2) knowledge may help dispel fear, and (3) many research questions remain for risk analysts and risk communicators, but there is nothing intrinsic in bioterrorism that hinders the use of risk analysis.



Charles Haas

Responses of the German Public to the Threat of Anthrax

Joining Haas at the Monday Plenary was Ortwin Renn, Chair of the Board of Directors of the Center of Technology Assessment in Stuttgart, Germany, and Chair of Environmental Sociology at the University of Stuttgart. "After the tragic terrorist attack on September 11, public opinion in Germany responded to the new threat by demanding more powerful governmental actions to reduce vulnerabilities and to fight terrorist activities worldwide," said Renn, Past President of SRA-Europe. "At the same time people were confronted with the possibility that new attacks could also be targeted to the German infrastructure or U.S. establishments in Germany." As part of the new awareness of threats and vulnerabilities, Germans shared the fear that terrorists could send anthrax-contaminated letters to German citizens. In a poll in early December almost 40% of the German population believed that terrorists would launch a direct attack on Germans by using biological weapons such as anthrax.



Ortwin Renn

"As of today, Germany has not experienced a single case of an anthrax attack, but many false alarms (hoaxes)," Renn explained, adding that "the most prominent have been white boxes with white powder that were found in the city of Kiel and a letter with white powder that was sent to an unemployment office in a small town in Eastern Germany. In both cases a preliminary test showed positive results, leading to frantic actions by governmental officials and intense press coverage. Several TV stations changed their programs and reported directly from the scenes of the actions. A second test confirmed, however, that both samples contained harmless substances that could be mistaken for anthrax. In the aftermath of these two events, an informal agreement between the main media and the government was put into effect that obliged the media to reduce coverage on potential anthrax incidents unless testing has been performed."

"The reaction of the public was close to hysteria," Renn said. "The Robert-Koch-Institute (responsible agency for testing anthrax for the German Federal Government) received several hundred calls in the aftermath of the two cases; a survey a day after the two incidents (at a time when the public was already informed about the fake character of the powder) revealed that 64% of Germans felt personally threatened by anthrax exposure." He explained that it was a classic example of social amplification of risk: everyone felt the randomness of the threat; everybody could be exposed to the risk; there was hardly a possibility for personal control or precautionary measures; the circumstances of the threat were highly stigmatized and socially disruptive; the risk was involuntary, malicious, and dreadful; and public management agencies appeared confused and helpless.

"In the weeks after the two incidents the perception of personal threat disappeared fast," Renn concluded, "while the perception of a general threat to the population at large remained fairly high even until today."

Tuesday Plenary Improving Environmental Safety Through Third-Party Inspections

Dr. Howard Kunreuther, of the Department of Decision Science at the University of Pennsylvania Wharton School, began the Tuesday Plenary Session panel discussion on "Improving Environmental Safety Through Third-Party Inspections" by giving examples of the success of using third-party inspections to supplement regulatory enforcement as a way of improving environmental safety. He then invited panel members Jim Belke, Larry Collins, Sally Mattison, and Chris Conley to explore some of the challenges in using third-party inspections for reducing environmental risks.



**Howard
Kunreuther**

Jim Belke, environmental engineer with the Environmental Protection Agency's (EPA) Chemical Emergency Preparedness and Prevention Office, spoke on "Voluntary RMP Third-Party Audits." Belke explained that the EPA Risk Management Program went into effect in June 1999 and requires certain companies to file a Risk Management Plan (RMP), with the level of required action in relation to risk. "We want to incorporate this third-party audit system into this program," he said. "We don't have a lot of resources in some areas for doing audits."



Jim Belke

Belke said the private sector probably has a lot more people with training to do audits than there are in government and that there are many advantages to the program: improved overall RMP implementation (more independent audits=better compliance=more safety), improved focus of traditional enforcement, a more open approach at participating facilities, and fostering of the growth of private sector process safety expertise.

Belke pointed out the concerns and challenges of the program, but also stressed the potential incentives. Companies would benefit in the regulatory area by receiving a temporary exemption from EPA inspections, financially by working with insurance companies, and in the eyes of the public, especially with larger companies, because they can demonstrate to their stakeholders that they are forward-looking companies.

Larry Collins, Zurich Services Corp., discussed "The Insurance Industry as 3rd Party Auditor: A New Resource for Environmental Safety."



Larry Collins

Pointing out that environmental safety is everyone's business, Collins said the insurance industry has a vested interest in environmental safety ("and that is the almighty dollar") because the insurance company writes the policy and pays the claim and its bottom line suffers when there is a loss.

Collins said using the insurance industry as third-party auditors would be a "win-win" situation for all involved. "We're visiting the customer already," he explained. "My people write the risk assessment reports; our people are going out there and are writing recommendations."

He said the insurance companies would visit the customer as normal and give audit reports to the customer. Then those that pass turn their reports in. The incentives for the company are that over time their premiums would go down, EPA would reduce its regulatory scrutiny, and the public could see the report.

This would benefit EPA, the public, and industry. "The EPA gets to find out who the good guys are and they get a new source of information from the insurance company about what's happening out there," Collins said. The public gets 7,500 new field reps, gets more in-depth information, and finds out who the "good guys" and the "bad guys" are. Industry would benefit from reduced regulatory scrutiny and better recognition for their efforts.

Collins admitted that there are limitations to this plan. "We too are only part of the answer," he said, explaining that buying environmental insurance isn't a requirement, sometimes a report isn't written, and the insurance companies can't be everywhere, all the time. "This is simply using an existing resource and finding a new way to apply it," he concluded. "We'd be delighted to help out."

Sally Mattison, Staff Attorney for the Clean Air Council, spoke about a roundtable hosted by the Council in November



Sally Mattison

2001 called "Risk Management Plans—Assessing the Viability of a Third-Party Audit Program." The Council received a grant from the EPA to host the invitation-only event, which was intended to build on previous research by the Wharton Risk Management and Decision Processes Center and EPA by bringing together a group of 31 individuals from environmental organizations, labor unions, local emergency planning committees, academia, govern-

ment, and the insurance industry to discuss the viability of a third-party audit program.

Mattison said most attendees at the roundtable were generally in favor of a third-party audit program and discussed their opinions in regard to funding, report disclosures, role of participants, who should train/certify/supervise third-party auditors, and who should administer such a program. She also discussed the Clean Air Council's point of view regarding a third-party audit program and presented the Clean Air Council's booklet, *A Citizens' Guide to Risk Management Plans* (for more information, see www.cleanair.org).

"As a second step in the process of assessing community attitudes, Clean Air Council will conduct meetings with community members in the Pennsylvania/New Jersey/Delaware region this winter to explore the issues raised at the roundtable," Mattison said. "The Council hopes to work with EPA and Wharton on reaching out to additional labor, environmental, and community groups across the country on the issue of third-party audits. The Council is also interested in working with EPA to persuade additional states to accept delegation."

Chris Conley, Manager of Consumer Personal Care for Johnson & Johnson Worldwide Environmental Affairs, gave the industry perspective on third-party audits. After presenting background information on Johnson & Johnson (J & J) and its

environmental policy, Conley provided examples of how J & J is using third-party audits. The Management Awareness and Action Review System (MAARS) is one type of third-party assessment J & J supports. Each year every facility conducts a self-assessment, identifies gaps and continuous improvement opportunities, and generates a management action plan. Every three years a third party verifies the self-assessment report. Conley said the MAARS process has resulted in improved performance, lower environmental risk, and increased management awareness.

"ISO 14001 is the second third-party assessment process that we're involved with," Conley said. ISO 14001 refers to



Chris Conley

voluntary standards in the environmental field that require a series of practices and procedures that result in an environmental management system which is valuable, according to Conley, because an independent certification body comes and asks questions and provides a framework for getting things done.

J & J also uses third-party audits for doing external manufacturer assessments, supply chain assessments, and process hazard analysis. He said the use of a neutral third party helps J & J maintain its standards in protecting the safety and health of all employees and the public, protecting the environment, and providing products and services which consistently meet or exceed customer requirements. "We manage risk in a multitude of ways," Conley concluded. "Environmental risk-reduction programs with third-party assessments are key to managing businesses."

Wednesday Plenary

An Analysis of the European Foot and Mouth Crisis

Wednesday's Plenary Session was a panel discussion focusing on the European Foot and Mouth Disease (FMD) outbreak that occurred in the spring and summer of 2001. The outbreak was mainly confined to the United Kingdom, but France, Ireland, and the Netherlands were also affected.



Ragnar Löfstedt

The panel, organized by Dr. Ragnar Löfstedt of King's College London, included four other members.

Dr. George Gray (Harvard Center for Risk Analysis, Harvard School of Public Health) gave a short talk on sanitary and phytosanitary risk assessment in relation to the challenges and lessons from FMD. Professor Nick Pidgeon (School of Environmental Sciences, University of East Anglia) discussed the public's perception of the crisis shortly after the outbreak. Dr. Michael Rogers (Group of Policy Advisors, the European Commission) discussed the European Union (EU) role in dealing with the crisis. Professor Tsegaye Habtermariam (College of Veterinary Medicine of Tuskegee University) looked at the likelihood of FMD being introduced to the United States.



George Gray

Löfstedt began the session by laying out some of the facts of the outbreak. Some of these facts were disputed during the session, so a follow-up analysis was done. In summary, in the United Kingdom 2,030 animals contracted the disease and, depending on the source, between 3,915,000 and six million animals were slaughtered for precautionary measures. The cost to the United Kingdom at large (mainly effects on farming and tourism) has been estimated to be approximately 0.5% of the Gross National Product, or approximately six billion U.S. dollars.

The panelists brought up the following points: (1) Recycling: The likely cause of the disease was animal feed (swill to pigs) derived from waste recycling. Similarly, the likely cause of Bovine Spongiform Encephalopathy (Mad Cow Disease) was animal feed derived from waste recycling. Based on this evidence the use of recycled waste for animal feed should be re-analyzed. (2) Public information: There was not much public

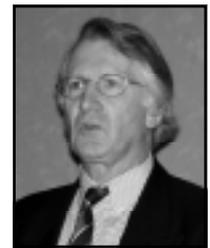
information available on why a massive cull of animals was indeed necessary. (3) Public perception: Extremely high response to questionnaires (distributed both six weeks and three



Nick Pidgeon

months after the outbreak) and follow-up discussions reflected strong public feelings about the issue. The effectiveness of culling was debated, with point of view often depending on sympathy toward farmers or support of tourism. (4) Vaccination: The Netherlands issued suppressive vaccinations to prevent the further spread of the virus while the United Kingdom did not. The EU Directive on this bans the use of vaccination except as an emergency disease control.

There was significant discussion within the United Kingdom whether it too should use suppressive vaccinations. (5) Enforcement: It is generally believed that the outbreak was caused by an enforcement failure rather than a risk management error. For example, British swill regulations specify that catering waste-containing products of animal origin should be cooked at 100 degrees C for at least one hour. This will kill the FMD virus. If the cause was indeed swill, this policy was not followed. (6) Culling policy: Arguably the outbreak of FMD in the United Kingdom would have been much higher had not drastic culling measures been put in place. (7) U.S. infections:



Michael Rogers

Based on the bans presently in place, it is highly unlikely that the United States will be affected by FMD. Although the probability is low, it is possible because of globalism and trade or bioterrorism. Ways to keep FMD out of the United States include preventing the entry and spread of FMD and eradicating the disease. (8) Risk Assessment: Risk assessment is essential because doing analyses can help in preparation for if/when something does happen. It is important for members of the



Tsegaye Habtermariam

Society for Risk Analysis to understand just how significant these issues are.

Special Open-Discussion Sessions Address September 11 and Anthrax

The 2001 Society for Risk Analysis (SRA) annual meeting included special open-discussion sessions addressing the September 11 and anthrax events. Program Chair and 2002 SRA President Robin Cantor encouraged meeting participants to share information about their professional experiences and views regarding the risks related to these events by attending these special sessions. Participants presented their views on the importance of the recent events on risk analysis and/or summarized relevant risk analysis work and activities that they wanted to bring to the attention of the broader SRA community.

September 11

The enormous and catastrophic destruction created by the September 11 attack and how the Society can contribute to understanding, preventing, and responding to such a disaster was the subject of the special session on 4 December. Rae Zimmerman (SRA Past President, 1997) led the session and provided background information on the World Trade Center (WTC) from her recent research tracing public service performance before, during, and after the attack as a means of guiding future design and operation of those services. She underscored the need for SRA to get involved given the relevance of risk analysis and risk management and the multidisciplinary perspective it offers to the problems raised. Although city services rebounded relatively quickly, September 11 changed the way New York City looks at its social services, its infrastructure, and how buildings are constructed. Zimmerman indicated that the high degree of spatial and functional interconnectedness and density of the infrastructure, for example, may have contributed to multiple failures of interdependent systems, but also offered the redundancy to provide alternate routes for people and services quickly during response and recovery.

Over two dozen participants in the session identified a number of ways in which risk analysis and risk management can contribute to problem solving for response, recovery, mitigation, and prevention of consequences associated with terrorist attacks in the context of the WTC site, the Pentagon, and other

impacted areas. Although many of the approaches identified were recognized as being common to current areas of expertise, the applications to extreme and catastrophic events will be unique and challenging:

- Relative risk and comparative risk approaches can address the technical, social, and economic tradeoffs among the costs and benefits of configuring services, centralization versus decentralization, redundant (backup) versus nonredundant systems.
- Organizational and institutional risks and vulnerabilities (particularly government risk) that arose in connection with coordination of health and environmental quality are a key concern of risk management; for example, decisions made by the medical community are often environmentally based.
- The application of known and conventional approaches to monitoring health and the environment require revisiting how data can be acquired quickly and adequately in crises, and how these procedures can be set up prior to the onset of a disaster to operate more efficiently during them.
- Risk communication and management are fundamental to understanding issues associated with who organizes, distributes, and communicates information in a crisis and the understanding that such information is not value-free and has costs associated with it.
- A number of existing risk-based models can be adapted to provide frameworks for all of these risk problems.

Anthrax

A session facilitated by Caron Chess was held on 5 December for members to discuss risk analysis as it pertains to anthrax.

Approximately 20 members, including academics and practitioners from a range of disciplines, listened to John Ahearne open the discussion by describing a National Research Council meeting held to provide input to managers of the postal service on risk issues. Ahearne noted that the postal service is dealing with tradeoffs between cost (the service's debt is already high) and safety. Safety is of great concern to the postal workers' union, particularly since it already lost two members to anthrax. Irradiation doses to kill anthrax spores would need to be 5 to 10 times that for routine food irradiation; costs for installation of radiation equipment to service mail-sorting centers across the country may be in the billions. The examination of the routes of exposure for postal workers is leading to new ways to reduce the likelihood of exposure. For example, those

who empty collection boxes currently do so by transferring contents by hand, potentially releasing spores. A new system is being proposed to reduce exposure by "bagging" the mail in the box.

While acknowledging the uniqueness of threats posed by terrorists bent on destruction, participants made a variety of observations based on their own research and experience. If other risk research has relevance, participants suggested there would be a need for interdisciplinary approaches examining systems and aiming for iterative, adaptive processes rather than focusing on specific products or outcomes. In addition, because the process of developing plans may be as important as the resulting plans, it may be worthwhile to involve stakeholders (for example, unions) in planning efforts. Such involvement may increase trust and provide critical information about work practices, communication channels, and likelihood of successful plan implementation.

Ongoing Dialogue on the September 11 and Anthrax Events

SRA invites the membership to use the *RISK newsletter* to build an ongoing dialogue on the September 11 and anthrax events. We want members to share information about their current research and professional meetings, consultations, and activities related to these events and their impact on the field and practice of risk analysis. Robin Cantor and Mary Walchuk will coordinate the submissions and report the information in subsequent issues of the *RISK newsletter*. Please send your summaries, comments, announcements, or other related informational items to mwalchuk@hickorytech.net and rcantor@lecg.com and indicate that the information is for the SRA dialogue on the September 11/anthrax events. <>>



Regulatory Risk Review

Is This the Year of the Horse, or the “Crab”?

David P. Clarke, American Chemistry Council

Under the Chinese lunar calendar, 2002 will be the Year of the Horse. But for the Environmental Protection Agency (EPA), it may well be the year of the Crab, the western symbol for Cancer. For nearly a decade EPA has wrestled with revising its Guidelines for Carcinogen Risk Assessment, the basic procedures and policies required when a risk assessor is evaluating the potential for a chemical to cause cancer. Now, in a 29 November 2001 *Federal Register* notice, the Agency put forward its July 1999 draft revisions (www.epa.gov/ncea/raf/cancer.htm) and asked the public to comment. EPA wants to publish final Guidelines in 2002, and the drumbeat is steady now to make that deadline.

While much in the Guidelines is familiar territory from earlier versions, one issue in particular stands out as having far-reaching implications for the future of carcinogen risk assessment. In EPA's draft there appear the following words:

“When sufficient information is developed in mature animals to show a mode of action for a specific tumor type, an evaluation will be made of whether the mode of action is qualitatively applicable to children (including infants and fetuses) i.e., same sequence of key events is anticipated to be involved . . . However, when there are no agent-specific data or there is no cogent rationale supporting the comparability between responses in children and adults, the mode of action will not be considered to be applicable for children.”

EPA is now wrestling with that issue—a mega policy question that could reasonably be featured at a World Wrestling Federation match of policy A versus policy B. In this case, policy A is EPA's proposal; policy B would state that the mode of action is considered the same for adults and children (unless there were data to indicate otherwise). The Agency's scientific basis for assuming a lack of comparable mode of action for adults and children is the notion that children are not small adults, with all the biological differences in fetuses and the young that would suggest they ought to be treated differently in assessing risks. That scientific rationale is offset by scientific observations that, in EPA's own words, “indicate that the mode of action for these [carcinogenic] agents would be the same for children and adults.” At bottom, observers agree, EPA

faces a *policy* decision on how to deal with the differences between children and adults in assessing cancer risks.

EPA is not the only organization grappling with children's risk assessment issues. The International Life Sciences Institute's Risk Science Institute is developing a framework for conducting risk assessments for the young that factors in metabolic and other differences in children at different stages of growth. The framework was described at the December Society for Risk Analysis Annual Meeting in Seattle but will not be publicly released until later this year.

In other news—for anyone following the activities of the White House Office of Management and Budget, a 4 December 2001 “prompt letter” to EPA on particulate matter (PM) research should be of interest. In the letter, Office of Information & Regulatory Affairs Administrator (OIRA) Dr. John Graham says that the letter is “to highlight some critical research needs that can help target environmental-protection investments to the most important sources of PM and thereby better inform cost-benefit studies of future air pollution control policies.” Noting that EPA is devoting a lot of its research budget to better understand the public health effects of PM, Graham says that OIRA supports EPA's research effort and recommends that the Agency focus on several critical issues, such as “potential confounding of PM health effects with other pollutants in the air” and “attribution of the PM health effects to specific constituents (for example, sulfates versus nitrates versus organic and elemental carbon, and metals).” Graham's use of prompt letters is a new device OIRA is using to weigh in on important issues on which he and his staff believe agencies could benefit from gentle nudging toward certain actions.

On 3 January 2002, OIRA also issued final Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies. The title of these guidelines says a lot. The contents of the 19-page final guidelines say a lot more—and it's well worth reading.

Whether Horse or Crab, the coming year promises to be new in many ways, not the least being the various new guidelines already published or in the offing. <<>>



SRA-Europe

12th Annual SRA-Europe Conference

“Integrated Risk Management: Strategic, Technical, and Organizational Perspectives”

The 12th Annual SRA-Europe Conference will be held 21-24 July in Berlin, Germany, and will be hosted by Peter Wiedemann (Research Center Juelich, Germany; Treasurer of SRA-Europe and Councilor of SRA International).

The focus will be on “Integrated Risk Management: Strategic, Technical, and Organizational Perspectives.” The preliminary list of topics includes holes in holistic risk management, integrating precautionary principle in risk-based decision making, opening the process: integrating stakeholders and stake-

seekers, early recognition of risks and rare events, and risk management of intangible assets.

The conference venue will be the Humboldt University in former East Berlin. Abstracts should be submitted by 1 March 2002 to SRA.Europe@fz-juelich.de.

Further information on the programme, annual meeting registration, and hotel booking can be found at the SRA-Europe Web site (www.sraeurope.com). Tourist information can be found at www.berlin.de/home/English. <<>>



Committees

Education Committee

Michael Greenberg, SRA Council

The Society for Risk Analysis (SRA) has received a \$15,000 grant from the ExxonMobil Foundation for the upcoming year to provide educational opportunities for African, Latino, and Native American college students who are interested in pursuing one of the risk analysis and risk management disciplines. Potential students should be enrolled in a college or university program in biology, chemistry, economics, psychology, geography, physics, environmental management, and other risk analysis-related disciplines. The competition for three student positions is open to all members of SRA. If you are interested in hosting an intern, please contact Michael Greenberg, the SRA council member who worked with ExxonMobil to obtain the funding and who is administering the program for SRA. He will provide you with the details and some examples. For example, last year an African American female student worked with Dr. Greenberg on a comparison of the legal restraints of redeveloping a Superfund site versus a brownfield site. Laboratory projects in toxicology, field studies in epidemiology, water resources, environmental justice, ecological risk analysis, and many other projects are welcome.

We have sufficient funds to support three students, but we hope to increase the size of the funding so that the Society can help increase the representation of African, Latino, and Native American populations in risk analysis and management.

Public Policy Committee

Jack Fowle and Leslie Hushka, Cochairs

Congressional Briefings on Vulnerability and Security

In the wake of the tragic events of September 11, many in the scientific community were struggling with how they could help, in particular how they could share their expertise on chemical and biological threats with legislators who cried out for more information. SRA's Public Policy Committee and the American Chemical Society (ACS) responded to this call, canceling Congressional briefings that were originally planned for the remaining portion of 2001. The groups partnered with other organizations, including the American Association of Engineering Societies, American Institute of Chemical Engineers, American Society of Civil Engineers, American Society of Mechanical Engineers (ASME), Council for Chemical Research, Institute of Electrical and Electronics Engineers-USA, and Synthetic Organic Chemical Manufacturers Association, to develop a seminar series on chemical and biological threats. The series, titled the Vulnerability and Security Series, was organized initially around three briefings and launched in November in Washington, D.C.

The first briefing in the series, "Responding to Chemical and Biological Terrorism," was held on 14 November 2001. It drew a crowd of 79 people, including 24 Congressional staffers, 6 staffers from the Executive Branch, and 6 reporters (including *Time* and Reuters). The session was moderated by Douglas Raber, Director of the Board on Chemical Sciences and Technology, at the National Research Council. Dr. Barbara Prince (Senior Scientist, Battelle Memorial Institute) reviewed the main difference between chemical and biological

warfare agents and the different response strategies needed for these two classes. She reviewed the types of chemical warfare agents that could be used by potential terrorists, including nerve/blister/choking agents, and toxic industrial chemicals (for example, phosgene and cyanogen chloride), including "precursors" for both of these groups. Dr. Raymond Zilinskas (Senior Scientist, Center for Nonproliferation Studies, Monterey Institute of International Studies) discussed basic scenarios for biological attacks, how terrorists can acquire biological agents and which agents are deemed critical by the Centers for Disease Control and Prevention, and needed defenses to guard against future biological attacks. He also discussed previous terrorist incidents in other countries by terrorist groups such as Aum Shrinrikyo and Rajneeshees, as well as attacks conducted by disgruntled individuals (Texas Medical Center incident in 1996) and what the United States can learn from these incidents. Dr. Patricia Quinlisk, Medical Director and State Epidemiologist from the Iowa Department of Public Health, discussed existing programs that state health agencies have to monitor for potential biological attacks. She concluded that the existing infrastructures in most states are weak in their ability to detect and respond to biological attacks, and communication among states to share health information must be greatly enhanced. The question-and-answer section of the briefing was very lively and generated many questions on the existing safety of the U.S. food and water supply.

The second briefing, "Unconventional Nuclear Threats," was held on 6 November 2001. This briefing focused on terrorism against nuclear power plants and transport of radioactive materials, including an overview of the integrity of nuclear power plant containment structures and safety requirements for transportation of radioactive waste material. Representative Doug Ose, R-CA, chair of the Subcommittee on Energy Policy, Natural Resources and Regulatory Affairs (House Committee on Government Reform), which has jurisdiction over the Nuclear Regulatory Commission, welcomed the audience, and Mr. Richard T. Laudanat, PE, Vice President of the Energy Conversion Group at ASME International, moderated the panel discussion. Speakers included Mr. Ken Sorensen (Manager of Transportation Risk and Packaging at Sandia National Laboratories), who addressed safety requirements for spent nuclear fuel, and Dr. Robert Nickel (Applied Science & Technology), who reviewed the structural integrity of nuclear power plant containment structures. Over eight people attended the briefing, including four members from the House.

The third briefing was held just one week later on 14 December on "Diversion, Misuse and Chemical Site Security." Daniel Horowitz, Special Assistant to the U.S. Chemical Safety and Hazard Investigation Board, moderated this briefing. Scott Berger (Director, American Institute of Chemical Engineers Center for Chemical Process) focused on the potential diversion and misuse of chemicals that are encountered in normal manufacturing processes and for public use. He set the stage for all the talks by presenting a brief history of risk assessment, describing the strengths and weaknesses of probability assessment and reduction process that is an effective way to make a facility less of a terrorist target. James Cooper (Manager, Synthetic Organic Chemical Manufacturers Association) described

SOCMA's joint efforts with the American Chemistry Council and the Chlorine Institute to improve chemical site security. In this effort, they chose to deviate from the traditional audit approach to security by putting themselves in the shoes of a terrorist and identified high-impact explosive chemicals, routine schedules, and symbolism (for example, disrupt the government or the economy) as attractive targets for terrorists. He began by noting that most facilities are not targets. He then described a six-step vulnerability-assessment process that SOCMA and its partners believe can help plant managers identify and reduce terrorist risks. The steps are (1) Chemical Hazards Evaluation, (2) Process Hazard Analysis, (3) Consequence Assessment, (4) Physical Factors Assessment, (5) Mitigation Assessment, and (6) Security Assessment/Gap Analysis. Cooper stressed that security counter measures should be tailored for potential threats. The final speaker was Robert Rosen (Director of Emergency Response and Issue Management, BASF), who discussed what should be done to manage a terrorist incident and minimize the adverse consequences. He began by noting that chemical companies are prepared for effectively dealing with incidents involving the release of hazardous chemicals. Companies have had programs in place for years because of the various voluntary programs as well as federal and state regulations that require companies to be prepared. He described the CHEMTREC and ChemNet programs and he emphasized the need to have arrangements in place in advance of any incident with various contractors to augment the staff and expertise a company may have to quickly and effectively respond to any emergency. Fifty-four people attended the briefing, including 21 Congressional staffers, 9 Executive Branch representatives, and 2 reporters.

Additional briefings in this series will be held in 2002. For additional information on these briefings and background material, see ACS's Web site at www.science_congress@acs.org. If you would like to get involved in planning future briefings on topics of interest to Congress, please contact Jack Fowle (202-564-4547) or Leslie Hushka (908-730-1064).

2001 Roundtable Discussion—Were You There?

Did you attend the SRA Public Policy Committee's Roundtable on "Integrating Science Into the Decision-Making Process" at the meeting in Seattle?

Would you like to participate in our ongoing discussion on possible outreach, communication, and training activities that SRA may want to consider in the future?

If so, we would like to hear from you! Please send a short email note to Jack Fowle (Fowle.Jack@epamail.epa.gov) and Leslie Hushka (leslie.j.hushka@exxonmobil.com) and we will include your name on our discussion group.

Conferences and Workshops Committee

Scott Ferson, Chair

Peer Review (May 2002)

The Society for Risk Analysis (SRA) will hold a one-day symposium, "Conflict, Consensus, and Credibility: A Forum on Regulatory Peer Review," tentatively scheduled for late May 2002 in the Washington, D.C., area. Further information will soon be available at the SRA Web site (www.sra.org).

For a decade people from across the political spectrum have touted peer review as a solution to the problem of bad science being used in policy formation. The Clinton Administration

Environmental Protection Agency (EPA) instituted formal peer review, and the Congress has seriously considered measures to require such review for all regulatory actions. Yet questions remain. Can peer review plausibly do what its proponents hope for? If not, what might it accomplish? Can peer reviews be hijacked by special interests? And how does peer review relate to expert advice? This forum will draw on knowledge and experience of its members and other experts to throw light on these contentious issues. This forum is intended for members of the staff of Congress, regulatory agencies concerned with peer review, participants in regulatory peer review, and others interested in the topic.

Foodborne Hazards (July 2002)

The First International Conference on Microbiological Risk Assessment, focusing on foodborne hazards, to be held 24-26 July 2002 at the University of Maryland Inn and Conference Center, College Park, Maryland, is being cosponsored by SRA, the U.S. interagency food safety Risk Assessment Consortium, the Joint Institute for Food Safety and Applied Nutrition, and the Joint Institute for Food Safety Research. This will be the first international conference on this subject. During the conference there will be sessions on microbiological risk assessments, resources for risk assessors, modeling challenges, non-bacterial microorganisms, intervention strategies for pathogen control, and risk communication. Further information is available at <http://www.foodriskclearinghouse.umd.edu/RACconference1stannouncement.html>.

NATO Workshop in Egypt (Fall 2002)

SRA will cosponsor a NATO workshop, "Comparative Risk Assessment and Environmental Management," to be held this fall in Egypt. Further information is available from Igor Linkov of Arthur D. Little at 617-566-8640 (linkov.igor@adlittle.com).

Remedial and abatement policies for areas contaminated by chemicals or physically disturbed by industrial development or military operations require management decisions which weigh the benefits of remediation against the risks and disruptions associated with their implementation. In particular, a framework is needed that integrates risk assessment and engineering options, generates performance standards, compares options for risk reduction, communicates uncertainty, and effectively allows reiteration of the decision-making process. The goal of the workshop is to review recently developed concepts and mechanics of comparative risk assessment, assign them to a quantitative analytical framework that meets the above requirements, and help decision makers choose among various environmental policies. Comparative risk assessment (CRA) is a methodology applied to facilitate decision making when various activities compete for limited resources. Application of this approach is extremely flexible. The workshop will discuss how CRA could be applied to prioritize the identified factors and to present alternative policies to decision makers when they make funding decisions. CRA can be used to coordinate alternative policies with municipal governments and to determine the impacts and requirements for each potential project.

Fire Safety Risk Analysis (December 2002)

SRA will cosponsor with the Society of Fire Protection Engineers (SFPE) a two-day symposium, "Issues in Fire Risk Assessment and Management: Addressing the Spectrum from Expected to Extreme Events."

The event is tentatively scheduled immediately before the SRA annual meeting in December 2002 in New Orleans. Brian

Meacham of Arup Risk Consulting is the chair of the organizing committee. Further information is available from SFPE at its Web site (www.sfpe.org) or from Julie Gordon (jgordon@sfpe.org).

Risk-informed analysis and design methods and risk-informed regulations are gaining momentum in many regulated areas of society, including building and fire safety. This is especially true in the performance building regulatory environment, where performance requirements often have a basis in the levels of risk tolerable to the affected or interested parties, be they the public, building owners and managers, building developers, code developers, code enforcement officials, and/or other policy makers. As a result, this symposium is intended to provide useable information to a broad spectrum of inter-

ested and affected parties, but with specific focus on fire protection engineers, risk analysis, building and fire officials, and building and facility owners and managers.

Gordan-Kenan Summer School on Risk Analysis (August 2003)

The Gordon Research Conferences Board of Trustees and the Kenan Institute for Engineering, Technology & Science have approved the proposal by Daniel Byrd, C. Richard Cothorn, Louis Anthony Cox Jr., James Wilson, and Charles Yoe for a new Gordon-Kenan Summer School on Risk Analysis. The initial summer school has been scheduled for 3-15 August 2003 at Roger Williams University in Bristol, Rhode Island. Further information is available at www.grc.org. <>>



Member News

Gail Charnley

Society for Risk Analysis (SRA) Past President Gail Charnley is a member of the 2002-2003 Sigma Xi College of Distinguished Lecturers. The College of Distinguished Lecturers provides an opportunity for outstanding individuals who are at the leading edge of science to be available to visit and speak to Sigma Xi-sponsored groups, thereby communicating their insights and excitement to a broad range of scholars and to the community at large. The topics of Charnley's lectures are "Protecting the Children: Risk Assessment, Risk Management, and Children's Environmental Health"; "Communicating About Environmental Health Risks: Using Science to Shape Policy"; and "Reducing Risks to Our Health and Environment: The Roles of Science and Precaution."

Robert C. Lee

Robert C. Lee, SRA member since 1992, has been appointed Assistant Professor in the Department of Community Health Sciences at the University of Calgary (Alberta, Canada), and Director of the newly formed Health Technology Implementation Unit of Calgary Health Region. Lee formerly worked in environmental risk assessment and decision analysis as a consultant in the United States and Canada. His current research and applied interests include innovative applications of stochastic and Markov modeling in health care decision analysis, as well as integration of decision analysis and Bayesian statistical methods into health technology assessment and implementation. He can be reached at rclee@ucalgary.ca.

Daniel M. Byrd III

The Life Sciences Research Office (LSRO) in Bethesda, Maryland, is pleased to announce that Daniel M. Byrd III, PhD, DABT, has joined the corporation as Deputy Director. LSRO is a nonprofit, science-based organization that provides information, analysis, and advice to policy and decision makers in the public and private sectors (see www.lsro.org).

Before coming to LSRO, Dr. Byrd managed Consultants in Toxicology, Risk Assessment, and Product Safety in Washington, D.C., for 12 years. He received both a BA (1964) and a PhD (1971) degree from Yale University. The American Board of Toxicology first certified him in 1982. He began his career by conducting research into the mechanisms and dosimetry of chemotherapeutic drugs at Roswell Park Memorial Institute and at the University of Oklahoma. He subsequently held sev-

eral positions of increasing responsibility at the Environmental Protection Agency, ending at the Science Advisory Board, where the Agency awarded him a Silver Medal for Management and Leadership. He also managed scientific and medical committees for three trade associations, the Distilled Spirits Council, the Halogenated Solvents Industry Alliance, and the American Petroleum Institute.

He recently coauthored *Introduction to Risk Analysis: A Systematic Approach to Science-Based Decision Making* with C. Richard Cothorn. Byrd is a charter member of SRA and belongs to nine other professional societies. He is the author of more than 40 scientific articles and 120 regulatory publications. At LSRO he can be reached at 301-530-7034 or byrdd@lsro.faseb.org.

Ragnar E. Löfstedt

As of 1 January 2002, Ragnar Löfstedt, PhD, is directing the King's Centre for Risk Management at King's College London. The Centre, which is based right in the heart of London, will conduct research in the following areas: risk communication within the health sector, a reasoned use of the precautionary principle, and the use and role of deliberation in present-day risk management. More information on the Centre will soon become available on the King's College Web site (www.kcl.ac.uk). Löfstedt's new address: Ragnar Löfstedt, King's Centre for Risk Management, School of Social Science and Public Policy, King's College London, Strand Building, London WC2R 2LS, UK; phone: +44-(0)207-848-1404; fax: +44-(0)-207-848-2984; email: ragnar.lofstedt@kcl.ac.uk.

P.J. (Bert) Hakkinen

Eminent scientist P.J. (Bert) Hakkinen has joined Toxicology Excellence for Risk Assessment (TERA) as a Visiting Scientist.

Dr. Hakkinen, an international expert in exposure assessment, will provide support to the Peer Consultation program and numerous other TERA efforts. He has over 20 years of professional experience, including work at Procter & Gamble involving global human exposure and risk assessment support for numerous types of consumer products and chemicals. Hakkinen has been an invited expert or reviewer for several Environmental Protection Agency-sponsored efforts to develop or revise exposure-assessment guidance and resource documents and software. He received the 1996 Outstanding Service Award from the Society for Risk Analysis. <>>



Journal Notes

Citation Ranking

Elizabeth L. Anderson, Editor-in-Chief, *Risk Analysis: An International Journal*

Recently, I have received a number of requests concerning the citation ranking for our journal, *Risk Analysis: An International Journal*. I understand that numerous authors who publish papers in the journal are interested in this information for many reasons, including for tenure consideration, so I thought it timely to share the information we have.

Risk Analysis is currently ranked in the Social Sciences Citation Index, which is a multidisciplinary database with multiple searchable author abstracts covering the journal literature of the social sciences. It indexes more than 1,725 journals spanning 50 disciplines, as well as covering individually selected, relevant items from over 3,300 of the world's leading scientific and technical journals.

The most important factor to judge a journal's ranking is considered the impact factor. The impact factor is a measure of the frequency with which the average article in the journal has been cited in a particular year. It is calculated by dividing the current citation publications in the two previous years for *Risk Analysis* by the total number of articles published in *Risk Analysis* during the same two years; therefore, the higher the number the better the impact factor. For *Risk Analysis*, the impact factor is 1.389. This places *Risk Analysis* number 2 of 29 under the heading Social Sciences, Mathematical Methods. The number 1 ranking journal is *Econometria* with an impact factor of 1.874, and the third ranking journal is the *Journal of the Royal Statistical Society Series A* with an impact factor of 1.279.

Further exploration of the Social Citation Index reveals that *Risk Analysis* is 5th of 29 in total cites under the heading Social Sciences, Mathematical Methods. For the immediacy factor, it ranks again 5 of 29 in Social Sciences, Mathematical Methods. The total cites impact was 1,503, the factor immediacy was 1.389, the Index 2000 was 0.236, the articles cited was 55, and the half-life was 6. The following information defines these terms.

Journal Citation Reports

By Institute for Scientific Information (ISI)

The Journal Citation Reports (JCR) is an essential, comprehensive, and unique resource for journal evaluation, using citation data drawn from over 8,400 scholarly and technical journals worldwide. Coverage is both multidisciplinary and international and incorporates journals from over 3,000 publishers in 60 nations. The JCR is the only source of citation data on journals, and includes virtually all specialties in the areas of science, technology, and the social sciences. JCR Web [<http://www.isinet.com/isi/products/citation/jcr/>] shows the relationship between citing and cited journals in a clear, easy-to-use framework. JCR Web is available annually in two editions: The Science Edition contains data from roughly 5,000 journals in the areas of science and technology. The Social Sciences Edition contains data from roughly 1,500 journals in the social sciences.

Citation and Article Counts

Citation and article counts are important indicators of how frequently current researchers are using individual journals. By tabulating and aggregating citation and article counts, the JCR offers a unique perspective for journal evaluation and comparison.

Citation counts refers to the formal acknowledgment of intellectual debt to previously published research, publicly recorded in the references listed by contemporary authors.

Total citations (listed in the Total Cites column in the Journal Rankings Window) indicates the total number of times that each journal has been cited by all journals included in the ISI database within the current product year.

Cited Half-Life

The cited half-life is the number of publication years from the current year which account for 50% of current citations received. This figure helps you evaluate the age of the majority of cited articles published in a journal. Each journal's cited half-life is shown in the Journal Rankings Window. Only those journals cited 100 or more times have a cited

half-life.

The chronological distribution of the cumulative percent of citations received per publication year is shown in the Cited Half-Life Calculation dialog box.

A higher or lower cited half-life does not imply any particular value for a journal. For instance, a primary research journal might have a longer cited half-life than a journal that provides rapid communication of current information. Cited half-life figures may be useful to assist in collection management and archiving decisions. Dramatic changes in cited half-lives over time may indicate a change in a journal's format. Studying the half-life data of the journals in a comparative study may indicate differences in format and publication history.

Cited Journal Listing

The JCR specifically identifies those publications that most frequently cited a particular journal. These citation links can reveal a journal's subject orientation, point to its closest peer or competitor publications, and describe specialty-specific networks of journals.

From each journal's Full Record page, you can access its Cited Journal Page to view a table of journals whose articles cited those in the journal you are investigating.

Citing Half-Life

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The chronological distribution of the cumulative percent of citations given out is shown in the Citing Half-Life Calculation dialog box. Only those journals publishing 100 or more citations have a citing half-life. Cited-only journals do not have citing half-lives.

Dramatic changes in citing half-lives over time may indicate a change in a journal's format.

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The JCR specifically identifies those publications that were most frequently cited by a particular journal. These citation links can reveal a journal's subject orientation, point to its closest peer or competitor publications, and describe specialty-specific networks of journals.

From each journal's Full Record page, you can access its Citing Journal Page to view a table of journals whose articles were cited by those in the journal you are investigating.

Immediacy Index

The journal Immediacy Index is a measure of how quickly the "average article" in a journal is cited. The Immediacy Index will tell you how often articles published in a journal are cited within the same year.

The Immediacy Index is calculated by dividing the number of citations to articles published in a given year by the number of articles published in that year.

The Immediacy Index is useful in comparing how quickly journals are cited. Because it is a per-article average, the Immediacy Index tends to discount the advantage of large journals over small ones. However, frequently issued journals may have an advantage here, because an article published early in the year has a better chance of being cited than one published later in the year. For comparing journals specializing in cut-

ting-edge research, the Immediacy Index can provide a useful perspective (see How to Find the Hottest Journals).

Impact Factor

The journal impact factor is a measure of the frequency with which the "average article" in a journal has been cited in a particular year. The impact factor will help you evaluate a journal's relative importance, especially when you compare it to others in the same field.

The impact factor is calculated by dividing the number of current citations to articles published in the two previous years by the total number of articles published in the two previous years.

Total Cites

Total Cites is the number of total citations to articles in the journal for the current JCR year.

Our publisher, Blackwell, is currently working on getting the Journal ranked in the Science Citation Index. The ISI will be able to consider the journal for expanded coverage in the CompuMath Citation Index (CMCI) and the Science Citation Index Expanded (SCIE). The subject category for which it would be appropriate is "Mathematics, Interdisciplinary Applications." ISI will be in touch with Blackwell when a decision has been rendered. We will keep you informed of future ranking information. <<>>



News and Announcements

ISEA ISEE Conference

The 12th Conference of the International Society of Exposure Analysis (ISEA) and 14th Conference of the International Society for Environmental Epidemiology (ISEE) will be held 11-15 August 2002 in Vancouver, British Columbia, Canada. The objective of the conference is to explore innovative approaches to evaluating exposure and exposure-response relationships and to explore the common ground between exposure assessment in occupational and environmental epidemiology. The conference will provide a relaxed setting for the exchange of information and the development of new research efforts. Discussion of methodologies and applications will be a focal aspect of the conference.

The theme, "Linking Exposures and Health: Innovations and Interactions," will be explored in a series of keynote lectures that will focus on the public health significance of exposure assessment and epidemiological research and on innovative approaches to assess exposure and evaluate exposure response relationships in the community and workplace settings. The conference will also promote innovation in both environmental and occupational health research by fostering interaction and interplay between these disciplines.

The abstract submission deadline is 15 February and the early registration deadline is 20 March.

More information can be found at www.conferences.ubc.ca/iseaieee2002.

TERA to Conduct VCCEP Peer Consultations

The Environmental Protection Agency (EPA) has selected TERA (Toxicology Excellence for Risk Assessment) as the independent organization that will manage the peer consultation process for the pilot Voluntary Children's Chemical Exposure Program (VCCEP).

The goal of VCCEP is to enable the public to better under-

stand the potential health risks to children associated with certain chemical exposures. Companies have volunteered to collect or develop health effects and exposure information on 20 chemicals and then to integrate that information into risk and "data needs" assessments. The assessments will be evaluated by a group of scientific experts using a peer-consultation process. Panels will include experts in toxicity testing, exposure evaluation, and risk assessment. Sponsors will submit assessments over the next five years. More information about VCCEP is available at EPA's Web site (<http://www.epa.gov/chemrtk/childhlt.htm>).

TERA will be selecting panel members, convening and chairing meetings to evaluate sponsors' submissions, and preparing reports of the meetings. Information on policies and procedures, updated schedules, and meeting reports will be found on TERA's Web site (<http://www.tera.org/peer/vccep>).

A meeting for stakeholders and other interested persons will be held on Wednesday, 20 March, from 4:30 to 6:00 p.m. at the Opryland Hotel Convention Center in Nashville, Tennessee, in conjunction with the Society of Toxicology annual meeting. See the TERA Web site for more information.

NCRP Report on Terrorist Events Involving Radioactive Material

The National Council on Radiation Protection and Measurements (NCRP) has released Report No. 138, "Management of Terrorist Events Involving Radioactive Material." The Report's main emphasis is on guidance to "first responders" and "emergency medicine personnel" who would be involved in the management of terrorist events involving radioactive material. It also has a Public Communication section. The Report is available from NCRP Publications, 7910 Woodmont Ave., Suite 800, Bethesda, MD 28814; 800-229-2652; <http://www.ncrp.com/rpt138.html>, at \$50 per copy. <<>>



Specialty Groups

Food/Water Safety Risk Specialty Group

Nell Ahl, Chair

Cristina McLaughlin, Vice Chair

Don Schaffner, Secretary

At the December 2001 Society for Risk Analysis Annual Meeting in Seattle, the Food/Water Safety Risk Specialty Group (FWSRSG) held the workshop "Decision Support Tools for Microbial Risk Assessment," organized by Isabel Walls and Peg Coleman. The day-long predictive microbiology workshop held prior to the annual meeting was a great success.

The FWSRSG also sponsored a number of symposia and sessions for the conference about risk analysis issues posed by hazards in food and water. For a description of the workshop and symposia visit the FWSRSG Web page at <http://members.tripod.com/Cristina704/Foodrisk/> and click on "Events" or go to www.sra.org, click on "Chapters, Sections, etc." and follow the links.

During the 3 December group meeting, ideas for a workshop at next year's annual meeting were discussed. Potential topics included the use of nutritional database in microbial risk assessment, risk assessment of genetically modified organisms, and economics and cost-benefit analysis in risk assessment.

A variety of symposium topics for the 2002 annual meeting were also discussed. The suggested topics include food security and traceability, foodborne disease outbreak data in risk assessment, risk assessment of food irradiation, risk assessment of genetically modified organisms, risk assessment for pharmaceutically active compounds in water, and risk implications of subtherapeutic use of antibiotics in animals.

If you would like to know more about the Food/Water Safety Risk Specialty Group you may visit the Web page or contact Secretary Don Schaffner by email (Schaffner@AESOP.RUTGERS.EDU).

For suggestions or questions about the Web page, email Cristina.McLaughlin@CFSAN.FDA.GOV.

Risk Communication Specialty Group

Katherine McComas, Chair

The Risk Communication Specialty Group (RCSG) had a busy schedule at the December SRA annual meeting in Seattle. On Monday evening, the RCSG cohosted a mixer with the Risk Science and Law Specialty Group. During the delightful event, members sampled delicious appetizers while listening to the classical tunes of Windsong, a local musical group. Much thanks SRA for providing financial support for this mixer.

On Tuesday morning, just under two dozen people turned out for the RCSG annual business meeting. (The lower turnout may have been due to the early hour of the 7:30 a.m. business meeting.) Members who attended elected two new RCSG executive committee members, Joseph Arvai and Adam Scheffler, and a new Vice-Chair, Robert O'Connor. Much thanks goes to outgoing executive committee members Cliff Scherer, Robert Griffin, and Ragnar Löfstedt. A great deal of thanks also goes to Ann Bostrom, who did a terrific job as 2000-2001 Chair of the RCSG. In addition to holding elections, the RCSG presented the Annual Student Paper Award. Five students submitted papers to this year's competition, and each paper was blind-

reviewed by three of four distinguished judges. Graduate student Felicia Wu won the \$500 prize, which was presented by Steve Lewis on behalf of ExxonMobil, which generously provides the prize but has no hand in the judging. The RCSG would like to thank Robert Griffin, who has graciously and skillfully organized the competition since its 1998 inception, and also this year's four judges: Joseph Arvai, Richard Rich, David Sachsman, and Craig Trumbo. Other business discussed at the RCSG meeting included an update of the special issue of *Risk Analysis* on risk communication from last year's competition, ideas for the use and growth of the RCSG Web site (<http://www.sra.org/rcsg>), and efforts to increase membership and visibility.



Felicia Wu receives the RCSG Annual Student Paper Award from Steve Lewis.

As overall membership in SRA is down by about 15%, the society is encouraging outreach to new members. RCSG members can play a part in identifying other societies where our interests intersect and new members may be recruited. You may have also noticed this year's new \$10 fee for RCSG membership. In the future, we hope that this small fee will enable us to offer new benefits to RCSG members, such as limited research or development funds.

As always, we invite all SRA members to visit our Web site, sign up for the risk-com listserv (visit the Web site for instructions to join), or join our specialty group. If you have any questions about the RCSG or suggestions for the group, please contact Chair Katherine McComas (mccomas@wam.umd.edu).

Risk Science and Law Specialty Group

John Applegate, Chair

The Risk Science and Law Specialty Group (RSLSG) thanks all of the panelists and attendees for interesting presentations, a great turnout, and stimulating discussions at our four sessions in Seattle. Our full schedule of papers was complemented by a mixer with the Risk Communication Specialty Group, which provided a lovely, informal setting for conversation within and across the groups' memberships.

Looking forward to New Orleans, RSLSG is already thinking about symposium panels. We are planning a "developments" panel whose topic or topics will be decided late in the year to address late-breaking (that is, after May!) events. We are also planning two panels with an international focus: one on world trade and another on European Union chemicals policy. Other proposals include the regulatory review process in the United States, jury decision making on risk issues, and drawing the line between science and policy in risk analysis. RSLSG is also considering for 2002 or 2003 a "Sunday workshop," an all-day continuing-education program that surveys environmental law for risk professionals. We welcome the suggestions and participation of all SRA members in these projects.

RSLSG elected new officers at its annual business meeting in Seattle. They are Chair John Applegate (jsapple@indiana.edu), Membership Vice-Chair Vern Walker, International Vice-Chair Michael Rogers, Internet Vice-Chair

John Keller, Secretary-Treasurer Katy Kunzer and Susan Poulter, and Executive Committee members Russellyn Carruth, James Hammitt, George Oliver, Wendy Wagner, and Jonathan Wiener. Congratulations to the new officers, and a big thank you to the outgoing officers, especially our immediate past chair, Wendy Wagner.

Dose Response Specialty Group

Ron Brown, *President*

The Dose Response Specialty Group (DRSG) welcomes our new officers starting in 2002: President-elect John Lipscomb, Environmental Protection Agency; Vice President Justin Teeguarden, ICF Consulting; and Trustee-at-Large Lynne Haber, TERA.

Activities at the 2001 Annual Meeting

The DRSG sponsored the following symposia at the 2001 Annual Meeting in Seattle, Washington: Children's Risk: Assessment, Valuation, Management, and Communication; Assessing Children's Risks from Environmental Exposures: A Framework; Children's Risk From Environmental Toxicants; When Model Meets Data in the Respiratory Tract; Criteria for Use of Compound-Specific Adjustment Factors; Applying QSAR Models in Dose Response Assessment; Technical Issues in Dose Response Assessment; Development and Applications of PBPK Models; Implications of Human Variability for Risk Assessment; Specific Applications in Dose-Response Assessment; and Benchmark Dose Analysis.

At the annual DRSG business meeting, the new officers were announced and options were explored for an electronic meeting to be held in addition to our quarterly tele-forums.



Dr. Elaine M. Faustman

Dr. Elaine M. Faustman, Professor and Director of the Institute for Risk Analysis & Risk Communication at the University of Washington, served as the keynote speaker at the DRSG mixer. Faustman gave an interesting talk on how mechanistic data can be used in risk assessment.

2001 DRSG Student Merit Award Winner

The winner of the 2001 Student Merit Award in Dose-Response Assessment is Crystal Saunders of Meharry Medical College. The title of her abstract is "The Acute Neurotoxicity of Benzo(a)pyrene and Fluoroanthene in F-344 Rats." For information on applying for the 2002 DRSG Student Merit Award, contact Justin Teeguarden (jteeguarden@icfconsulting.com) or see the announcement on the DRSG Web page (<http://www.sra.org/drsg>).

Monthly Teleconferences

The DRSG holds teleconference meetings on the first Tuesday of every month (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. All are welcome to participate (DRSG members and nonmembers). The next conference call will be held on Tuesday, 5 February 2002. In addition, tele-forum presentations on topics of interest to the group will be held on the first Tuesday of March, June, and October. New members and guests are welcome to join our meetings. To join a DRSG teleconference meeting, simply call 202-260-7280. When asked for the 4-digit code

number, enter 0577#. The discussions are always provocative and interesting! For notices of upcoming meetings, sign up for the DRSG email list on YahooGroups—see information under "DRSG Contacts."

DRSG Contacts

For more information on the DRSG or to become a member, please contact Ron Brown, (rpb@cdh.fda.gov). You can also sign up to be on our email list by registering on YahooGroups at <http://groups.yahoo.com/group/DRSG>. If you haven't done so previously, you must register with YahooGroups first and then sign up with the DRSG group. Contact Paul Schlosser (schlosser@ciit.org) if you have difficulties or concerns regarding the list.

Ecological Risk Assessment Specialty Group

Bruce Hope, *Chair*

At the 2001 Annual Meeting in Seattle, the Ecological Risk Assessment Specialty Group sponsored one symposia, five platform sessions, a poster/platform session, a poster session, and workshops. We had fewer offerings than last year but each session was well attended and discussions were spirited and thought provoking. My thanks to Wayne Landis (Western Washington University), Anne Fairbrother and Charlie Wisdom (Parametrix, Inc.), Brad Sample (CH2M Hill), Sue MacMillan (Maul, Foster & Alongi, Inc.), Bill van der Schalie (EPA), and Bill Alsop and John Samuelian (AMEC) for serving as symposium or session chairs. Thanks also to John Toll and Bob Fares for their efforts in organizing and instructing a well-attended workshop on the use of Bayesian methods in ecological risk assessment. Our business meeting and specialty group mixer was also a success, thanks in part to contributions from this year's corporate sponsors: Neptune & Company (Los Alamos, New Mexico), ENTRIX (Anchorage, Alaska), Keystone Environmental (Summerland, British Columbia, Canada) and the American Chemistry Council (Washington, D.C.).

As we move into 2002, I'd encourage those interested in ecological risk assessment to (1) join the specialty group by checking the \$10 box on your dues renewal form—we currently have 50+ paid members and these funds can go toward our specialty group activities, such as the mixer or possibly (some day) something like a student travel award, (2) volunteer as a session or symposium chair or to offer a workshop—be instrumental in bringing good work and new ideas to the forefront of the risk community, (3) submit good-quality ERA-related papers for consideration by our journal, *Risk Analysis*, (4) make contributions to the RISK newsletter, either directly to "Member News" or through me for inclusion in the specialty group area, (5) help recruit more corporate sponsors, again with the funds going toward the mixer or to student travel or other awards, and (6) more posters, always room for more, quality posters.

The 2002 SRA Annual Meeting will take place in New Orleans, Louisiana. The Ecological Risk Assessment Specialty Group encourages the presentation and discussion of a variety of ecological risk analysis-related work, whether theoretical or applied, for both technical and policy audiences.

Those who would like to join the Group and become more involved in our plans for New Orleans are encouraged to contact me by phone (503-229-6251) or via email (hope.bruce@deq.state.or.us).



Chapter News

Greater Pittsburgh Chapter

Lee Ann Sinagoga, Secretary

The Greater Pittsburgh Chapter of the Society for Risk Analysis (SRA) hosted a presentation in November 2001 by doctoral student Allison Robinson titled "GIS-Based Temporal-Spatial Studies for Environmental Risk Assessment." In this interesting presentation, held at the University of Pittsburgh Graduate School of Public Health, Robinson discussed her research, which is investigating approaches for the application and refinement of methods in GIS-based exposure assessments. The refined methods will be proposed as improved indices of exposure in epidemiologic studies of environmentally linked diseases.

The Greater Pittsburgh Chapter is proud to have as a Chapter member the newly elected President-elect of the SRA, Dr. Bernard Goldstein, Dean of the University of Pittsburgh Graduate School of Public Health.

New England Chapter

Susan Matkoski, NE-SRA Newsletter Coordinator

During the fall academic semester, the New England Chapter of the Society for Risk Analysis (SRA-NE) cosponsored two special sessions (24 October and 12 December) with the Massachusetts Institute of Technology (MIT) Science, Technology, and Society (STS) Program. The purpose of this joint effort was (1) to bring together the two communities and (2) by doing so, to look at risk assessment as a socially constructed technology.

For the 24 October special session, we welcomed Kristin Shrader-Frechette, PhD, Professor of Philosophy and Concurrent Professor of Biological Sciences and Environmental Sciences at the University of Notre Dame, whose talk was titled "Democratizing Risk Assessment." The talk was held at MIT and was attended by several SRA-NE and STS members. Using waste disposal and deforestation as case studies, Dr. Shrader-Frechette discussed and provided several examples demonstrating how risk assessment disenfranchises the public.

The December special session, titled "Beyond Democratization: An Alternative to Risk Assessment," was gracefully presented by Mary O'Brien, PhD, Ecosystem Projects Director, Science and Environmental Health Network, and author of *Making Better Environmental Decisions: An Alternative to Risk Assessment* (MIT Press, 2000). Dr. O'Brien's talk put forth the idea that current risk assessment practice is only a partial inquiry, the limitations of which primarily benefit the proponents, defenders, and beneficiaries of the hazardous activity, substance, or product whose risk is being assessed. She focused on the flaws of the current paradigm, starting with, and taken as a given, the hazardous activity, substance, or product, instead of viewing public and community goals as the appropriate starting point.

On 14 November, as part of the regular program, we welcomed both Allison Macfarlane, PhD, Senior Research Associate, Security Studies Program, MIT, and David Merrill, MS, Principal Scientist, Gradient Corporation.

Dr. Macfarlane's talk was titled "Risks of High-Level Nuclear Waste Disposal: The Yucca Mountain Story." Her presentation addressed the origin, time-frame, magnitude, and extent of

potential risks associated with disposing of high-level nuclear waste at Yucca Mountain, as well as how these potential risks have been communicated to the public. Since Macfarlane is a geologist, the audience also received a thorough description of the hydrogeologic setting of the proposed repository.

Merrill's presentation was "Public Health Risk Assessment of Hudson River PCBs: Challenges of Quantifying Time-Dependent PCB Concentrations and Exposure Uncertainty/Variability." Merrill's presentation focused on the exposure analysis conducted by Gradient Corporation on behalf of the Environmental Protection Agency for the recently completed public-health risk assessment of the Hudson River PCB Superfund site. He discussed issues such as determining the size of the exposed population of recreational anglers, the appropriate fish ingestion rate distributions (given existing fish advisories on the river), and how the investigators addressed calculation of future exposure point concentrations for declining PCB concentrations in fish.

Seminar dates for 2002 included those held 16 January and 5 February (joint session with the Licensed Site Professionals Association, featuring Louise Ryan, PhD, Professor of Biostatistics at Harvard School of Public Health), those being held 20 February (special session), 13 March, 10 April, 8 May, and 12 June.

The 16 January seminar featured two speakers. David Ozonoff, MD, MPH, Professor and Chairman, Department of Environmental Health, Boston University School of Public Health, presented on the topic of "Standards for Judging Science in Court: Neither Relevant nor Reliable." Dick Clapp, DSc, Associate Professor of Environmental Health, Boston University School of Public Health, presented a talk titled "Epidemiology and the EPA Dioxin Reassessment."

SRA-NE Membership

To become a member of the SRA-NE Chapter contact President Joseph Regna (phone: 617-623-2856, email: josephregna@hotmail.com) or Secretary Karen Vetrano (phone: 860-298-6351, email: kvetrano@trcsolutions.com). <<>

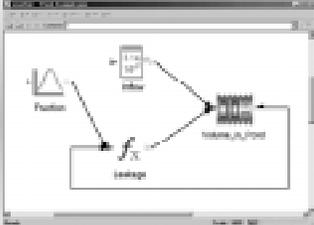


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Tenure Stream Faculty Position in Risk Assessment Department of Environmental and Occupational Health Graduate School of Public Health

University of Pittsburgh

The Department of Environmental and Occupational Health, Graduate School of Public Health (GSPH), invites applicants for a tenure faculty position for an independent investigator with expertise in risk assessment and environmental health science. Qualified MD or PhD candidates from any subdiscipline of Life Sciences, including pharmacology, toxicology, biochemistry, and molecular and/or computational biology, are encouraged to apply. Opportunities exist for collaborative interactions within GSPH and the School of Medicine, including programs with extensive recent growth in molecular toxicology and environmental health science, epidemiology, and computational biology. Further collaborations and support are available from outstanding resources in Pittsburgh Cancer Institute, Magee Women's Research Institute, Center for Neuroscience, and Children's Hospital. Applicants with the ability to establish independent research programs that complement existing strengths in free radical biochemistry, pulmonary biology, computational toxicology, molecular biosimetry and carcinogenesis, and occupational medicine are encouraged to apply.

Successful candidates will be expected to develop outstanding independent research programs and participate in graduate teaching with a special emphasis on basic principles of risk assessment in environmental science. Very attractive start-up packages and competitive salaries have been committed. Successful applicants' rank will be determined by qualifications.

Applications will be received until position is filled. Applicants should provide a one-page statement of research, a curriculum vitae, and names and contact information of three references to Bruce R. Pitt, PhD, Professor and Chairman, Department of Environmental and Occupational Health, Graduate School of Public Health, University of Pittsburgh, 3343 Forbes Avenue, Pittsburgh, PA 15260; Brucep@pitt.edu.

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Action/Equal Opportunity Employer*

Human Health Risk Assessor

ENTECH, Inc., is a small, woman-owned environmental services and consulting firm with a primarily Federal client base. Our principal business practice areas include CERCLA and RCRA site assessment, human health and ecological risk assessment, remedial action planning and implementation, and broad-based environmental compliance services.

We seek a staff-level Risk Assessor, primarily to perform Human Health Risk Assessments on Superfund sites and to represent and negotiate resulting positions with regulatory agencies. Experience with RAGS-D is essential. Background in toxicology, public health, chemistry, or related discipline. Advanced degree desirable, but not required. Excellent written and oral communication skills. Facility with Microsoft Access and Excel, database management, and statistical analyses.

Contact: Rick McKenna, ENTECH, Inc., 7918 Jones Branch Drive, Suite 500, McLean, VA 22102; phone: 703-442-0417; fax: 703-442-0419; email: mckenna@entechincorporated.com

"Strategic Responses to Risks of Terrorism" Conference at the University of Virginia

Since the September 11 attacks on the World Trade Center and the Pentagon, the United States can no longer afford to respond to threats of terrorism on an ad hoc basis. Instead, "Strategic Responses to Risks of Terrorism," a two-day conference at the University of Virginia, will assess the risks of terrorism to the critical infrastructures that sustain our democratic society and explore a range of potential national strategic responses.

Confirmed speakers include William Perry, former U.S. Secretary, Department of Defense; Donald Prosnitz, chief scientist, U.S. Department of Justice; Monte R. Belger, acting deputy administrator, Federal Aviation Administration; and Rick Klausner, former director, National Cancer Institute.

The conference will be held 17-18 April 2002 at the Boar's Head Inn in Charlottesville, Virginia. For more information, visit the conference Web site: http://www.mitre.org/support/strat_resp_conf02/.

Or contact Peggy Reed (phone: 434-982-2656, fax: 434-243-5571, email: RiskofTerrorismConference@virginia.edu).

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 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 15 January for the First Quarter issue (published mid-February), 15 April for the Second Quarter issue (mid-May), 15 July for the Third Quarter issue (mid-August), and 15 October for the Fourth Quarter issue (mid-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.

To place an employment ad on the Web site, fill out the online submittal form at www.sra.org/opptys.htm. To place other ads on the Web site contact the SRA Webmaster at webmaster@sra.org. Ads placed on the Web site will usually appear several days after receipt. For additional information see the Web site at www.sra.org/policy.htm#events.



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Address Changes: Send to SRA@BurkInc.com

Membership Directory on the Web?

The Society for Risk Analysis (SRA) Council has raised the question of whether the Membership Directory should be on the SRA Web site instead of being mailed to members. Please send your opinion to Mary Walchuk, RISK newsletter Managing Editor, 115 Westwood Dr., Mankato, MN 56001; fax: 507-625-1792; email: mwalchuk@hickorytech.net.

The Council is also still looking for membership input on whether the RISK newsletter should be converted to an electronic format, with members receiving an email notice of when the latest issue will appear on the SRA Web site. Should we go to an electronic-only RISK newsletter? If you have an opinion on the subject, please contact Mary Walchuk (contact information above) and let us know what you think.

The membership now has a choice: Paper or Electronic. Please let the Secretariat know if you would prefer to receive your RISK newsletter only on the Internet (contact Brett Burk, BBurk@BurkInc.com) and your name will be removed from the snail mailing list. If you would like to continue receiving a paper copy of the newsletter, do nothing and your name will remain on the snail mailing list. For now, all members will receive a notice of when the latest issue is on the Internet. <>>

Deadline for RISK newsletter Submissions

Information to be included in the **Second Quarter 2002** SRA RISK newsletter, to be mailed mid-May, 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 **5 April**.

Society for Risk Analysis Web Site
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