



RISK newsletter

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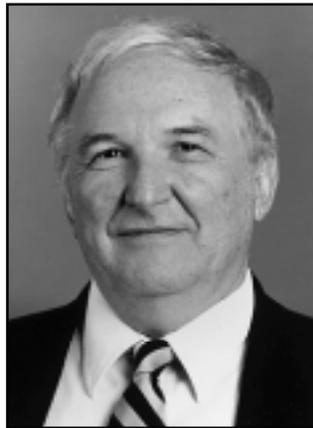
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First Quarter 2000

President-Elect John Ahearne Ready to Face Challenges

2000 Society for Risk Analysis Officers Announced

“Risk analysis is widely discussed and just as frequently misunderstood,” according to new Society for Risk Analysis (SRA) President-elect John F. Ahearne, Director of the Sigma Xi Center, Adjunct Scholar at Resources for the Future, and Adjunct Professor of civil and environmental engineering and Lecturer in public policy at Duke University. Announced as the new President-elect at the SRA 1999 Annual Meeting held in Atlanta in December, John said his main goal as President-elect and then President is “to develop a greater interaction with and recognition by Congress and federal agencies of the role SRA can play in enhancing understanding and application of risk analysis.” In his statement of goals John pointed out, “Several years ago SRA held a series of seminars for Congressional staff to explain what risk analysis is and is not and what it can and cannot do. The depth of misunderstanding and lack of knowledge was striking among staff who were writing legislation incorporating risk analysis requirements.”



John has plans for facing this challenge for the SRA and the field of risk analysis. “The field is not widely recognized as a discipline and, therefore, the value of the Society is not seen by those outside of our community,” he explained. “Changing these perceptions is the main challenge that I see. Several steps can

be taken to clear up the misunderstanding and lack of knowledge about risk analysis: (1) although the American Chemical Society/SRA luncheons are a success for developing contacts, Congressional staff morning sessions could be held again to explain the fundamentals, principle applications, strengths, and weaknesses of risk analysis; (2) by increasing contacts with federal agencies SRA could become a source of objective information (many of our members now do this individually); and (3) the SRA could develop a process by which Society positions could be taken when issues directly involving risk analysis are being discussed in the media. My experience with Sigma Xi, the Scientific Research Society, and the American Physical Society has shown that this last step is difficult and must be developed and used with care. However, if SRA is to be the professional society of the risk analysis community, SRA should not avoid speaking on behalf of that community.”

“As another goal,” John continued, “I intend to stress the continued support of our journal and the peer-review process to ensure that our publication continues as the premier communication vehicle within the risk community.” He said to maintain its first place among risk analysis journals, “we must continue to maintain high-quality peer re-

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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 bylaws and is directed by a 15-member elected Council.

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

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

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President's Message

With the Society for Risk Analysis about to celebrate its twentieth birthday and as the 21st century takes hold, the time is ripe for taking stock of the risk field. There is much to celebrate concerning the past 20 years—a 2,200+ membership spanning scholars and practitioners ranging over diverse disciplines; a successful set of journals in *Risk Analysis*, the *Japanese Journal of Risk Analysis*, and the fledgling *Journal of Risk Research*; annual meetings occurring regularly in three continents; and the emergence of the Society as the recognized source of risk expertise and authority. Where do we go from here?

The possibilities are many, of course, but the Society needs to focus its energies to register progress. Accordingly, I see my presidency as an opportunity to initiate a process of strategic thinking and planning, to extend the Society's gains to new areas of public policy and to new quarters of the world where risk approaches now only flicker on the horizon. Accordingly, we will enlist the Society's governance process to assess the major challenges that merit our attention. We will use modern technology to accomplish much of the Society's routine business via the Internet and teleconferencing. Executive committee and council meetings this year will center upon thinking through strategic initiatives that can be brought to the membership for decision and action. This will not be in the form of a strategic or master plan for the Society, but rather a set of concrete initiatives designed to capitalize on the Society's leadership position in risk matters.

The first step is to assess challenges, strategy, and initiatives. To begin the process, my opening address at the Atlanta meeting identified three candidate pathways for consideration. The first recognizes the globalization of risk associated with expanding economic, life-style, and communication systems, a threatened planetary environment, and international transfers ranging from technology to terrorism. Risk analyses need to address these changes. We also need to become more international in our research. Currently, we have sections in Europe and Japan, and active discussions are now underway to explore possible new sections in Australia, New Zealand, India, China, and Russia. We need to cast an even broader net to engage the developing world where most future vulnerability and risk will be concentrated.

Second, and concurrent with the growth of risk analysis, is the emergence of a worldwide civil society and democratic movement. The nation-state system is in metamorphosis, with nongovernmental organizations and citizen activists playing expanding roles in risk assessment and management. A marked absence of productive dialogue continues to divide risk experts and these groups, many of which exhibit a marked hostility to risk thinking. We need a strategy of engagement to initiate dialogues in a variety of new arenas. And we also should consider the composition of our own Society membership.

Third, the Society must also be aggressive in its responsibility for ensuring high-quality science (including the social sciences) in the conduct of risk assessment and management. The national movement to more participatory and collaborative decision processes, laudatory in most respects, raises fundamental questions as to how to conduct good science and still accommodate social values—in short, how to operationalize the analytic-deliberative process espoused in the U.S. National Research Council's "Understanding Risk" and how to integrate risk and precautionary principles. The Society needs to be in the forefront of these efforts and not fighting back fires.

As we initiate strategic thinking on these issues, we seek your counsel, wisdom, and advice. We need to hear from you. Please weigh in with me (rkasperson@clarku.edu) or your Council members.

Roger E. Kasperson

1999 Annual Meeting: Past President's Message

Risk Analysis Under Fire

One of the things I've tried to focus on this year is continuing to enhance the visibility and profile of the Society for Risk Analysis (SRA). I've done that by having SRA jointly sponsor a number of important meetings with other societies, government agencies, and other organizations; by continuing to sponsor Congressional briefings on risk on Capitol Hill; by talking about the Society and our activities in different forums around the world; and by trying to engage in productive discussions those who are currently not enamored with risk analysis as a discipline. And I've been focusing on this partly because I'm scared.

Risk analysis is a discipline under fire. There is a serious, growing, antirisk-analysis sentiment that is challenging the legitimacy of science in general and risk analysis in particular. Risk assessment is being described as a "bogus discipline" that is "on its way out" as a way to "rationalize government decision making." Risk assessment is supposedly a key part of "the problem" and not a part of the solution. And what is it being replaced with? The so-called precautionary principle, or the "better-safe-than-sorry" approach. The precautionary principle is being described as a "new paradigm" that is "taking the place" of risk assessment.

I think most people in this room would agree that better safe than sorry is just common sense, but I don't think anybody would agree that risk analysis and precaution are interchangeable. When used judiciously and constructively, the precautionary approach can be a useful component of decision making and priority setting and, in fact, is often used that way. But when it's used in the absence of considerations of risk, it promotes fear and politicizes science. After all, risk is just part of the information that is used to protect public health and the environment. Public values, politics, feasibility, economics, and the law also play important roles.

The fact is, we are only human and cannot really predict the future or anticipate all possible outcomes of a decision. Human decisions inevitably have unforeseen consequences, reflecting the basic underlying reality of what Herbert Simon called "bounded rationality," or the idea that our individual human brains are much less complex than the external reality they are attempting to model. Our plenary speakers this morning provided some very educated guesses about what we need to worry about and what we can look forward to in the next century. But even they readily acknowledged that we can't foresee it all.

I think, really, that the risk-versus-precaution debate is really just the newest skirmish in the age-old battle between science and ideology, between evolution and creationism. It's about religion. In one corner, we have risk analysis—the practice of using science to draw conclusions about the likelihood that something bad will happen—and in the other corner, we have the belief that instead of science, the precautionary principle will somehow solve all our problems.

But this is a false opposition because precaution and risk analysis can and do work together, as the work of many people in this room will attest. The precautionary principle recognizes the fundamental role of uncertainty in policy making and attempts to shift the burden of ignorance towards precaution rather than inaction. Unfortunately, those who misuse it also challenge the role of science as the preeminent basis of decision making while offering no alternative source of authorizing knowledge.

We need to work hard to defend our discipline and to engage those who oppose it. We need to do our best to show that risk analysis is not a threat; it's a useful tool. Risk analysis doesn't tell us what is safe; people make those decisions. We can never prove absolutely that something bad might not happen, but if we ignore what science helps us infer, emotional and financial resources are diverted towards worrying about every potential risk and real health and environmental problems stay under funded, overlooked, or on the back burner.

Enough pontificating. All in all, it's been a delight and an honor to be SRA president this year and to be part of the Society's evolution into the next century. But it will also be a delight to pass on the presidential authority to Roger Kaspersen, who will now take over as the new SRA president. I know he will be a capable leader and I wish him all the best as he shepherds us forward. Thank you, Roger and thanks to you all for your support this year.



Gail Charnley



RISK Assessments

Letters From Our Readers Encouraged

We welcome letters from RISK newsletter readers concerning topics in the newsletter or others of interest to SRA members. Please limit the letters to 250-300 words and send them to RISK newsletter Managing Editor Mary Walchuk (525 N. 6th St., Mankato, MN 56001; e-mail: mwalchuk@mctcnet.net; fax: 507-625-1792). Letters may be edited for clarity, grammar, spelling, and length. ◇◇◇

(*Officers, continued from page 1*)

view, which is the hallmark of the best technical journals.”

John's vast background and experience will help him achieve his goals. He received a Bachelor of Engineering Physics and M.S. from Cornell University and an M.A. and Ph.D. in physics from Princeton University. He was Executive Director of Sigma Xi, The Scientific Research Society, from 1989 to 1996; Vice President and Senior Fellow at Resources for the Future from 1984 to 1989; Commissioner of the U.S. Nuclear Regulatory Commission from 1978 to 1983 (Chairman from 1979 to 1981); and White House Energy Office and Deputy Assistant Secretary of Energy in 1977-78. John worked in the Office of the Secretary of Defense on weapons systems analysis, force structure, and personnel policy; was Deputy and Principal Deputy Assistant Secretary of Defense from 1972 to 1977; served in the United States Air Force (USAF) from 1959 to 1970, resigning as a major; worked at the USAF Weapons Center on nuclear weapons effects; and taught at the USAF Academy, Colorado College, and the University of Colorado (Colorado Springs).

A member of the National Academy of Engineering, the American Nuclear Society, and the National Council on Radiation Protection and Measurements, John is a Fellow with the American Physical Society, the American Academy of Arts and Sciences, and the American Association for the Advancement of Science. He is Chair of the National Research Council (NRC) Board on Radioactive Waste Management. John is a member of the Comptroller General's Research and Education Advisory Panel and Executive Council on Information Management and Technology, U.S. Government Accounting Office; the Department of Energy (DOE) Nuclear Energy Research Advisory Committee; the DOE Environmental Management Advisory Board; the NRC Committee to Assess Plutonium Disposition Technologies; the NRC Committee on Upgrading Russian Capabilities for Controlling Highly Enriched Uranium and Plutonium; the University of California President's Council for Management of the National Laboratories (Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and Lawrence Berkeley National Laboratory); the U.S.-Russian Independent Scientific Commission on Disposition of Excess Weapons Plutonium; and the Board of Directors of Wisconsin Energy Corporation.

John was formerly Chair of the Center for Strategic and Informational Studies Project on Nuclear Regulatory Process Review; Chair of the NRC Committee on Environmental Management Science Program; Chair of the NRC Committee to Review the Research Activities Completed Under the Energy Policy Act of 1992 (EPACT); Chair of the NRC Committee on Risk Perception and Communication; Chair of the NRC Committee on Future Nuclear Power Development; Chair of the Secretary of Energy Advisory Committee on Nuclear Facilities Safety; Cochair of the Committee on External Regulation of the DOE; Cochair of the NRC Committee on the National Forum on Science and Technology Goals: Environment; Cochair of the NRC Panel on Opportunities in Plasma Science and Technology; and Vice-chair of the NRC Committee on Risk Assessment and Management of Marine Systems.

With these and many more honors and accomplishments to his name, John is most proud of one thing: “Along with my wife Barbara, succeeding in raising five wonderful children.”

Secretary Timothy L. McDaniels

Timothy (Tim) L. McDaniels was chosen to continue serving as the SRA Secretary. McDaniels is Director of the Eco-



Risk Research Unit at the University of British Columbia, where he is an associate professor in the Institute of Resources and Environment and the School of Community and Regional Planning. He holds a Ph.D. in decision sciences and policy analysis from Carnegie Mellon University.

Tim's professional activities focus on decision making for risk management questions, in prescriptive and descriptive terms.

His recent work emphasizes ecological risk management questions, as well as technical and value modeling for complex facilities, new methods of value elicitation, and risk perception for ecological issues. Other interests include issues such as road safety and insurance and risk communication in human health contexts. He publishes extensively in risk-related journals, on topics including risk perception and communication, applied decision analysis, precautionary approaches to policy, valuation, citizen involvement, and related issues.

Tim is an adjunct associate professor in Engineering and Public Policy at the Heinz School at Carnegie Mellon University, where he is also a coinvestigator and member of the executive committee for the Center for the Integrated Study of the Human Dimensions of Global Change. In addition, he is a member of the Institute for Risk Research at the University of Waterloo in Canada and has been a visiting scholar at the University of Surrey and the University of East Anglia in England.

Tim began his involvement with SRA in 1986 as a student member. In 1997, he was elected to the position of Secretary. While on the SRA Executive Committee, Tim has served SRA in a number of capacities including Chair of the Education Committee, member of the Executive Committee, member of the Publications Committee, member of the Editor Search Committee, member of the Year 2000 International Symposium Organizing Committee, contributing author of a proposal to establish eight to ten regional university-based centers for research and teaching in risk analysis, and author of the “Risk Education Resources” column in the SRA RISK newsletter.

Councilors Michael R. Greenberg,

Mitchell J. Small, and John J. Vandenberg

Michael R. Greenberg, Mitchell J. Small, and John J. Vandenberg took office as Councilors at the Atlanta meeting.

Michael R. Greenberg is Professor and Director of the Center for Neighborhood & Brownfields Redevelopment at Rutgers University. He received his B.A. degree in history and math from Hunter College of The City University of New York and his M.A. and Ph.D. from Columbia University in 1969.

Michael works on environmental policy, especially as it applies to the quality of environmentally stressed inner-city neighborhoods and U.S. government nuclear and chemical weapons sites. During the last five years, his research has concentrated on predicting resident, business, and local official ratings of neighborhood quality and relating these ratings to neighborhood environmental attributes and resident demographic and personality characteristics. The products of this work include

two books, *Environmentally Devastated Neighborhoods: Perceptions, Policies, and Realities* (1996) and *Restoring America's Neighborhoods: What Local People Can Do* (1999), as well as four articles published in *Risk Analysis*.

The Center for Neighborhood & Brownfields Redevelopment conducts research and provides services to municipalities and educational outreach. The Center is working on a neighborhood and brownfields redevelopment curriculum for community leaders and residents, evaluating the impact of brownfields on surrounding residential neighborhoods, the potential role of brownfields redevelopment on controlling sprawl, and risks associated with building housing on former brownfield sites. All of these studies demand a cross-disciplinary approach to research which concentrates on redeveloping multiple-hazard neighborhoods. Michael directs a group of faculty and students studying the economic impact and land-use issues associated with the U.S. Department of Energy's major nuclear weapons sites in Colorado, Idaho, Tennessee, South Carolina, and Washington. For four years, Michael has served on the National Academy of Sciences/National Research Council Committee that oversees destruction of the U.S. chemical weapons stockpile.

Michael has been a member of SRA since 1983. He is associate editor for environment for the *American Journal of Public Health* and for 19 years has served as the codirector of the New Jersey Graduate Program in Public Health. He received an award from the U.S. Environmental Protection Agency (EPA) for research and a career achievement award from the Association of American Geographers.

Mitchell J. Small is Professor of Civil & Environmental Engineering, and Engineering & Public Policy, at Carnegie Mellon University. He joined Carnegie Mellon in 1982 following completion of his Ph.D. in environmental and water resources engineering from the University of Michigan. At Carnegie Mellon, Mitchell serves as the Associate Department Head for Graduate Education in the Department of Engineering & Public Policy. He has also worked as a consulting engineer, with Hydrosience, Inc., from 1975 to 1978.

Mitchell's research involves mathematical modeling and statistical evaluation of environmental quality, exposure, and risk. He has developed methods for statistical modeling of variability and uncertainty for air, soil, surface-water, and groundwater problems.

His recent work has evolved to consider the impact of human risk perception and behavior in integrated exposure assessments and has included collaboration with statisticians, toxicologists, economists, and behavioral and decision scientists. Current applications include the study of regulations and risk communication for drinking water utilities, decision support for site and soil remediation, and integrated assessment of ambient particulate matter. Support for this research has come from a number of government agencies and private industry, including a National Science Foundation Presidential Young Investigator Award from 1986 to 1991.

Mitchell has been active in providing advice to EPA, first as

a member of the Science Advisory Board (SAB) Environmental Engineering Committee, 1985-1991, and currently as a consultant to the SAB and a member of the EPA Office of Research and Development Board of Scientific Counselors. He has served on a number of National Research Council committees reviewing issues of environmental contamination and risk in the United States, most recently the Commission on Behavioral and Social Sciences and Education's Committee on Risk Characterization. He currently serves as an Associate Editor for the journal *Environmental Science & Technology*,

with particular responsibility for the Policy Analysis section, has been a member of SRA since 1995, and is a member of the SRA Publications Committee.

John J. Vandenberg is the National Research Program Director for Particulate Matter (PM) for EPA's Office of Research and Development and Assistant Laboratory Director for Air Programs of EPA's National Health and Environmental Effects Research Laboratory. He received his B.A. from the College of Wooster, Ohio, and M.S. and Ph.D. in biophysical ecology from Duke University.

John is actively involved in risk assessment training and research and assessment of air pollution in the Slovak Republic, with a current emphasis on the effects of PM exposure in children. Prior to his current positions, for six years he conducted risk assessments and policy evaluations for hazardous air pollutants in EPA's air quality regulatory program, developed risk assessment guidelines and conducted research with the California Department of Health Services (on detail from EPA), and then worked for five years directing EPA's Research to Improve Health Risk Assessments program in EPA's Office of Research and Development.

In recent years, John has served on scientific advisory boards to the Harvard Center for Risk Analysis, the Lovelace National Environmental Respiratory Center, and the Mickey Leland National Urban Air Toxics Research Center. He also has represented EPA in a variety of national and international meetings such as a recent World Health Organization (WHO) Working Group on accepting epidemiological evidence for environmental health impact assessment and strategic planning meetings by the European Science Foundation/European Union/WHO and by the California Air Resources Board.

John also has served since 1991 as an adjunct faculty member in the Nicholas School of the Environment at Duke University where he teaches graduate-level courses on air quality management and on human health and ecological risk assessment, both emphasizing the interdisciplinary nature of risk assessment and management through hands-on applications, and advises graduate students. He also has developed and taught continuing education classes and seminars at the EPA, focused on health risk assessment and air quality management and the implications of these areas on research needs and priorities.

A member of SRA since 1991, John has served as a councilor of the Research Triangle Park Chapter of SRA, was a charter member of the SRA Dose-Response Specialty Group, and has organized and chaired several sessions at SRA annual meetings. ◇◇



Councilors Mitchell J. Small, John J. Vandenberg, and Michael R. Greenberg

Society for Risk Analysis Awards Presented at 1999 Annual Meeting

Distinguished Achievement Award Bernard D. Goldstein, M.D.

Dr. Bernard D. Goldstein is the recipient of the 1999 Society for Risk Analysis (SRA) Distinguished Achievement Award, an honor given for extraordinary achievement in science or public policy relating to risk analysis. Saying that he is one of the few physicians she knows who understands the conduct of scientific research, Gail Charnley presented Goldstein with the award at the 1999 SRA Annual Meeting in Atlanta.



Goldstein is the Director of the Environmental and Occupational Health Sciences Institute, a joint program of Rutgers, The State University of New Jersey, and the University of Medicine and Dentistry of New Jersey

(UMDNJ)-Robert Wood Johnson Medical School. He has been Chair of the Department of Environmental and Community Medicine at the Medical School since 1980. He is also Principal Investigator of the Consortium of Risk Evaluation with Stakeholder Participation and served as Acting Dean of the UMDNJ-School of Public Health from 1998 to 1999, the first year of its formation.

Charnley praised Goldstein, saying his contributions are not just related to his research; he has also made outstanding contributions to environmental and public health protection. "He is the only person of his stature I know who is not just respected but admired by both environmental activists and industry capitalists," she said.

From 1983 to 1985 Goldstein was Assistant Administrator for Research and Development at the Environmental Protection Agency (EPA), and while there he was partly responsible for instituting the ban on lead in gas. He is a member of the Institute of Medicine, where he has chaired the Section on Public Health, Biostatistics, and Epidemiology. He is the author of over 200 articles and book chapters related to environmental health sciences and public policy.

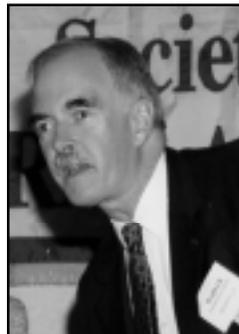
Upon receiving his award, Goldstein said the successes of the SRA include being together and seeing the Society grow. He said there are also impediments facing the SRA. "It isn't always going to be as easy as it seems when we're all together like this," he stressed. "Don't think it's a slam-dunk that the world will value science; there's always Kansas." He said people from the religious fringe to animal rights activists will harm the Society's efforts to help. "We cannot ignore them. We must pay attention to this," he emphasized. He said the battle is being fought by the people who own pets and are basically being won by people who say their pets are at risk, but that SRA members know it is animal research that has made their pets healthy and done away with the need for the term mangy cur. "Can we basically empathize with the pet owner, work with the pet owner?" Goldstein asked. "If we lose that battle it will hurt the effort to do risk assessment."

Goldstein also said scientists must be able to safely, ethically do human research and should advocate the precautionary principle but define it differently. Saying there is no need to evoke the precautionary principle if there is certainty that there's a problem, he went on to comment, "You're duty bound to say, 'Here is the research we will do once the precautionary principal is invoked to see if I'm right or wrong.'"

According to Goldstein the last impediment is basically ourselves. "This is too much fun in some ways," he explained. "We sometimes lose sight of why we are doing this. . . . There's a world out there that does not know what we do and unless we can communicate what we do to that world we are our biggest impediment."

Outstanding Risk Practitioner Award Dr. D. Warner North

Dr. D. Warner North is the recipient of the 1999 Outstanding Risk Practitioner Award for the private sector. This award is given for substantial contributions to the field of risk analysis through work in the public or private sectors. North has been a practitioner of decision analysis and risk analysis with three consulting firms, SRI International (1967-76), Decision Focus Incorporated (1977-98), and, for the last year and a half, NorthWorks, Inc., in Belmont, California.



North has carried out applications of decision analysis and risk analysis for electric utilities in the United States and Mexico, for the petroleum and chemical industries, and for a variety of government agencies. These applications have included hurricane seeding for NOAA, biological quarantine of Mars for NASA, wildland fire protection for the Forest Service, a wide variety of environmental pollution and toxic chemical issues for EPA and industry clients, and, over the past decade, disposition of nuclear waste.

He has served as a member of and consultant to the EPA Science Advisory Board since 1978, on the Scientific Advisory Panel to the Governor of California for Proposition 65 (1987-89), and as a Presidentially appointed member of the U.S. Nuclear Waste Technical Review Board (1989-94). North is a coauthor of many reports dealing with environmental risk for the National Research Council. He is currently the chair of the steering and advisory committees for the International Workshop on the Disposition of High-Level Radioactive Waste, held in November 1999 and the subject for a National Research Council report to be released in 2000.

Since 1976 North has been a part-time member of the faculty of Stanford University, in what is now called the Department of Management Science and Engineering.

North is an SRA Past President (1991-92) and a Past President of the Northern California SRA Chapter and currently

serves as chair of the SRA Advisory Board. In accepting his award, North expressed his gratitude to the many colleagues who have worked with him on applications of risk analysis and on reports dealing with issues in risk analysis practice.

Chauncey Starr Award Dr. H. Christopher Frey

Dr. H. Christopher Frey received the 1999 Chauncey Starr Award which honors individuals under the age of 40 who have made exceptional contributions to the field of risk analysis. Frey is perhaps best known within SRA for his work on devel-



oping, demonstrating, and disseminating methods for simultaneous quantification of both variability and uncertainty.

In 1992 Frey received an American Association for the Advancement of Science (AAAS)/EPA Environmental Science and Engineering Fellowship while on the research faculty at Carnegie Mellon. That summer he worked within EPA's Exposure Assessment Group as an AAAS and EPA Environmental Science and Engineer-

ing Fellow and produced a report on "Quantitative Analysis of Uncertainty and Variability in Environmental Policy Making." He received the AAAS Bernard Scholarship in recognition of this widely circulated work.

In 1994 Frey joined the environmental engineering group in the Department of Civil Engineering at North Carolina State University in Raleigh and developed a new graduate program in air pollution engineering at the University. In July he was promoted to Associate Professor with tenure. He is also working with the Institute of Power Engineering in Poland on a feasibility study of low-emissions gasification technologies for refinery repowering.

Frey is the recipient of a National Science Foundation CAREER Award and is the principal investigator for many sponsored research projects in three main areas: (1) probabilistic emission inventories, (2) probabilistic technology assessment, and (3) on-road highway vehicle emissions.

An active member of the SRA, Frey served as President of the Research Triangle Chapter in the mid-1990s. He has organized or participated in several SRA workshops on probabilistic methods and served three years as a Councilor. In collaboration with Alison Cullen, he completed a special project of SRA which has resulted in the book *Probabilistic Techniques in Exposure Assessment*, published in 1999 by Plenum.

Outstanding Service Award Dr. Robin A. Cantor

Dr. Robin A. Cantor received the 1999 Outstanding Service Award for her extraordinary service to the SRA. She is a past Councilor of the Society and was also Chair of the Grants Management Committee and a member of the 1996 and 1997 Annual Meeting Program Committees. "SRA expanded my traditional economics training by introducing me to other social

and natural science perspectives on risk," she said. "This had fundamental consequences for my research interests and capabilities in interdisciplinary areas. I have greatly benefited from the Society's healthy encouragement of dialogues across sciences and risk topics."

Saying the SRA is a vibrant Society where members can get involved and make a difference, Cantor explained, "Several years ago, someone complained that there was no home for university or educational programs. I was given the green light by the organizers for the annual meetings to hold an evening roundtable to discuss the issue. The SRA Council now has an Education Committee, and there are regular sessions at the annual meeting addressing risk education topics. This spring, SRA will hold a symposium on Risk and Governance, and I have been privileged to serve on the planning committee.



Cantor is a Principal and Managing Director in the Environmental and Natural Resource Economics Practice of the Washington, D.C., office of LECG. Prior to joining LECG in September 1996, she was Director of the Decision, Risk, and Management Science Program, a research program of the National Science Foundation. From 1982 to 1991, she was a senior researcher at Oak Ridge National Laboratory. She currently has a faculty appointment in the Graduate Part-Time Program in Environmental Engineering and Science of the Johns Hopkins University.

Her research and consulting expertise includes several areas of environmental economics, risk management, public policy, and societal decision making. Her more-than-40 publications include refereed journal articles, book chapters, reports for federal sponsors, and a coauthored book on economic exchange under alternative institutional and resource conditions. She currently serves on the editorial boards of *Risk Analysis* and the *Journal of Risk Research*.

Fellow Dr. Donald G. Barnes

Dr. Donald G. Barnes has been working at the interface between science and policy in a variety of activities both inside and outside government service. For the past ten years he has served as the Staff Director of the Science Advisory Board (SAB) in the Office of the Administrator at EPA. He is a member of the EPA Science Policy Council and has served on the EPA's Risk Assessment Forum. He played a key role in the development of the Agency's risk assessment practices for noncancer health effects.

An SRA member since the early 1980s, Barnes was a Councilor from 1991 to 1993, was on the Advisory Board from 1997 to 1999, and was a reviewer for the Health Section of *Risk Analysis*.



(Awards, continued on page 12)

Should SRA Take Positions on Public Policy Issues? Report from an Annual Meeting Roundtable

Gail Charnley, SRA Past President

For a number of years now, the Society for Risk Analysis (SRA) has been debating (somewhat halfheartedly) whether the Society should take positions on public policy issues. There have been a number of occasions when SRA has been appealed to by legislative staff members, regulators, scientists, and others to express an opinion on a piece of legislation or a regulatory decision or provide guidance on particular science policy issues of concern. SRA leadership has always declined to do so, believing that it would be impossible—and unfair—to try to represent the diversity of opinions within our membership in such situations. Recent experience within other professional societies resulting in membership divisiveness, disruption, and discontent bears out the wisdom of refraining from taking official positions on issues.

Nonetheless, some believe that it is our responsibility as risk professionals to take official Society positions on risk issues. There is a feeling that if SRA does not provide appropriate policy guidance in certain situations, those who are less qualified or who have greater vested interests will do so. Policy makers will hear only the more extreme views of various advocacy organizations and will not hear the presumably more balanced and educated views of risk professionals. It is partly with those concerns in mind that SRA has been sponsoring risk briefings on Capitol Hill for the past four years. The goal of the briefings is educational; speakers are chosen who represent the spectrum of views on an issue so that the different views and the basis for the differences are clarified.

The issue of whether SRA should take official policy positions was debated at a roundtable meeting during the 1999 SRA Annual Meeting. Bill Bishop, of Procter & Gamble, gave a brief presentation supporting the idea that SRA should take positions on the grounds that there is no organization better qualified to speak for the appropriate role of risk analysis. He cited as an example of why our influence is needed a recent speech by the president of Consumers Union at the Seattle World Trade Organization (WTO) meeting, in which it was asserted “Consumer priorities . . . must reiterate and clarify the right of WTO member nations to take measures to implement national ‘no risk’ policies . . .”

Bishop reviewed the position-taking policies of several professional scientific organizations and found that some do take positions while others do not. Those who do have different procedures for the development and approval of official positions; some authorize the elected governing council to develop positions on behalf of the membership, some authorize the current and past presidents to do so collectively, some seek broad member input on issues and provide for feedback to amend or drop policies, and some delegate responsibility for choosing and actively advocating for positions to their public affairs committee. Some societies cautioned that taking positions on issues sometimes comes with pain and can build fac-

tions and hurt feelings, but it beats being silent on key issues that are within the domain of the organization’s primary areas of interest. Bishop also noted that one of our keynote speakers, Sheldon Krinsky, has stated that when issues of interest to SRA begin to be “worked outside established institutions, science and scientists begin to lose their relevance.” SRA’s distinguished achievement awardee, Bernie Goldstein, described one of the impediments to SRA growth and development as ourselves and the danger of “failing to make ourselves relevant.” Goldstein pointed out that if we are unwilling to speak for the role of science and risk analysis, then there are a number of change agents who will and we probably will not like what they have to say.

Bishop proposed that SRA should develop a process to evaluate, choose, and develop positions on relevant public policy issues. He urged the SRA Council to work with other “like-minded” organizations (e.g., Society of Environmental Toxicology and Chemistry and Society of Toxicology) to leverage our strength and credibility.

Paul Slovic, of Decision Research Inc., then made a presentation opposing the idea that SRA should take public policy positions. He observed that he has been a member of SRA since its beginning in 1981 and that one of the features he most appreciates is the enormous diversity among SRA members with regard to their backgrounds and views. This very diversity, which is so much a strength of the organization, is a major factor in leading Slovic to believe that SRA should not

. . . some believe that it is our responsibility as risk professionals to take official Society positions on risk issues.

take stands on controversial risk policy issues.

Slovic has observed this diversity not only among SRA members but also in the scientists he has systematically studied in his research on risk attitudes and perceptions. This research has led him to conclude that, although danger is real, risk is a construct of the human mind. Scientists differ greatly in their views about what risk is and about how to measure it. Definitions of risk and methods of risk assessment are inevitably subjective and value laden. It is not surprising, then, that scientists’ views on risk often depend strongly on whether they are men or women, whether they work in industry or in academia, or whether they prefer an egalitarian society to a hierarchical society.

Slovic emphasized that risk is politics as well as science and that defining and measuring risk is an exercise in power; whoever controls the definition holds the key to which course of action will look best, be least risky, be most cost-effective, etc. He believes that because this reality underlies much of the fighting that takes place in society when it deals with risk controversy, it is inevitable that it will surface and lead to bitter conflict within SRA as well if we were to take stands on risk policy issues. As a result, members would lose respect for one another and would stop listening to and learning from each other. Slovic urged SRA members to take advantage of the many ways we have already to lend our voices to important causes without forcing SRA to play this precarious role.

Dave Clarke, of the Chemical Manufacturers Association, gave the final presentation. He suggested that, at a minimum, SRA members ought to be able to agree upon a set of risk assessment principles that could be used to advocate on behalf of the discipline and its use in societal decision making. That would include the basic principle that risk assessment is a useful—and in many cases indispensable—approach to gathering and organizing information about hazards and the probability of an effect occurring. He echoed Goldstein's earlier point, asking, "If SRA isn't going to defend risk assessment from mischaracterizations and misuses, what other group will?"

A general discussion took place when the three presentations were completed. Some felt that the SRA's role is to articulate and clarify policy issues but not to advocate. Our role as experts could be threatened if we become advocates. SRA should help educate about policy issues by clarifying the various arguments and their strengths and weaknesses. One way we could accomplish this is through position papers that articulate without advocating. We could evaluate the implications of what different policy choices might be and explain

those. Others felt that even education is controversial; who does the educating and what do they say? Some believe that it is important that we talk to policy makers and others outside the Society or we will end up just talking to ourselves. Presumably the SRA membership shares some core values that we could impart, but there is a danger that those could be so basic as to be useless in terms of providing policy guidance to others. Two areas that were cited as potentially reflecting core values were the problem of regulating on the basis of hazard instead of risk and the seeming incompatibility of risk assessment and the so-called precautionary principle. The non-United States participants in the roundtable pointed out that our discussions were quite United States regulatory focused and that we should broaden our horizons to include international issues and views.

The debate concluded with assigning this author the tasks of writing about the roundtable for the *newsletter* to facilitate wider feedback and of drafting a proposed SRA statement as a focus for discussion on the roles of risk assessment and precaution in risk management decision making (see box below).

Should SRA Risk Taking Positions?

The issue of whether SRA should take positions has come to the fore recently as a result of increasing antirisk and antiscience sentiments. Risk assessment is being described as a "bogus discipline" that is "on its way out" as a way to "rationalize government decision making." Instead, the so-called precautionary principle is being described as a "new paradigm" that is "taking the place" of risk assessment. At the 1999 SRA Annual Meeting and in President's messages in previous issues of this *newsletter* I exhorted the SRA membership to defend risk analysis as a useful decision tool that is well grounded in science. There were a number of sessions addressing the precautionary principle at the Annual Meeting. A roundtable discussion on the precautionary principle indicated that there is a strong view among some in the membership that the risk "versus" precaution issue is one that SRA should no longer stay silent on. Some believe that this is an ideal opportunity for SRA to take a useful policy position that is unlikely to be controversial among the membership because—presumably—we all support the usefulness of risk analysis in decision making.

With that in mind, I have drafted a statement for the membership's consideration. This statement suggests that risk assessment and precaution can play useful and complementary roles in decision making. While it may seem simplistic and insipid to those of us who work in risk analysis, its goal is to educate those who dismiss risk analysis as a "bogus discipline" but don't really understand what it is and what it does, and those who don't know what risk analysis is but are currently only hearing from those who oppose it in favor of the precautionary principle.

Please review this statement and send me your comments at healthrisk@aol.com. I am interested in your comments on (1) the statement itself and (2) whether SRA should issue a statement of this type. If you believe that SRA should issue a statement of this type, please describe what you believe would be a fair and appropriate procedure for developing and advocating such statements (e.g., authorize SRA Council, authorize a policy committee, require membership-wide surveys, etc.). If you do not believe that SRA should issue a statement of this type, please tell me why. Before you comment, please read the above article, which describes members' views on the benefits and drawbacks of SRA taking positions on policy issues. I will report on your responses in the next *newsletter*.

Draft SRA Statement on the Complementary Roles of Science and Precaution in Environmental Health Risk Management

Recently some authors have characterized risk assessment as antithetical to society's goals of protecting human health and the environment. Those critics have suggested that, in its place, a precautionary principle be used for deciding how to manage uncertain but potentially irreversible and significant risks. The Society for Risk Analysis believes that both risk assessment and precaution are useful approaches to helping us characterize the nature and likelihood of threats to our health and our environment and to deciding how to minimize them. We use lots of different kinds of information, including information from science and risk assessment, to help us decide which threats we should worry about and to figure out how best to manage them. When we decide what are the best ways to reduce, eliminate, and avoid threats, we exercise precaution when we aren't sure about the exact relationship between a threat and its impact on health or the environment. Exercising precaution means two things: (1) not waiting for complete scientific information before we decide to act to minimize a potentially serious risk and (2) making sure that minimizing that risk does not increase other types of risks to health or the environment.

Confronting the Risks of the 21st Century

Society for Risk Analysis 1999 Annual Meeting Speakers

6 December 1999, Atlanta

With the theme “Confronting the Risks of the 21st Century,” the members of the Society for Risk Analysis (SRA) were presented with three interesting and informational talks at the Monday morning Plenary Session of the SRA 1999 Annual Meeting held 5-8 December in Atlanta. Rima F. Khabbaz, M.D., Deputy Director of the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases at the Centers for Disease Control and Prevention (CDC), opened the session with “Public Health Threats of the 21st Century”; Sheldon Krinsky, Professor of Urban Environmental Policy at Tufts University in Massachusetts, spoke on “Biogenetics in Full Bloom: Chasing the Risks”; and M. Granger Morgan, Engineering and Public Policy Department Head and Professor at Carnegie Mellon University, shared his views on “Information Technology, Risk, and Risk Analysis in the (Early) 21st Century.”



“Public Health Threats of the 21st Century”

Rima F. Khabbaz, M.D.

The Centers for Disease Control and Prevention (CDC) is a federal agency in Atlanta whose mission is to monitor health and disease, which includes many areas. In “Public Health Threats of the 21st Century” Rima Khabbaz shared with SRA members a report by Steve Ostroff, Associate Director for Epidemiologic Science at the National Center for Infectious Diseases at CDC, discussing health threats in a few of those areas.

“I think it is fair to say we are doing a good job on infectious disease mortality,” Khabbaz said as she showed that infectious disease mortality parallels life expectancy information—as infectious disease mortality dropped over the 20th century, life expectancy went up. She said mortality today is less than 10 percent of what it was at the turn of the century, and infectious disease mortality has been brought down by medical improvements and improvements in public health—improved sanitation and the advent of antibiotics and vaccines. “This will be the legacy of our century in terms of infectious diseases,” she added.

Showing examples of many magazine covers which presented infectious diseases as killer germs, killer viruses, and killer bacteria, Khabbaz said there is a contrast between the decrease in risk from infectious disease and the public and media perception of risk from infectious diseases that is hard to reconcile. “I think it’s fair to say that domestically the hype is unjustified,” Khabbaz said, but added that because the leading cause of death worldwide is due to infectious disease, “the word killer may not be inappropriate when talking about what is happening worldwide.” The leading infectious disease killers worldwide are acute respiratory infections, HIV/AIDS, diarrheal diseases, tuberculosis, malaria, and measles.

There are also emerging infectious diseases: new, reemerging, or drug-resistant infections whose incidence in humans

has increased within the past two decades or whose incidence threatens to increase in the near future. Khabbaz said there seems to be a new disease every year. “Many of the diseases

which we have spent a lot of time dealing with today were unknown 20 years earlier,” she explained. Listing many of the domestic and international diseases that appeared in 1999 (including indigenous malaria, salmonella, summer influenza, legionnaires’ disease in the Netherlands, gastrointestinal illness from drinking Coca Cola, and Nipah virus) she said, “It is really hard to predict what we are going to see next year.” She added that factors associated with emerging infectious diseases include population growth and demographic shifts, human behaviors and life styles, technologic advances, and failure to implement public health programs.

“When we talk about emerging diseases, we also talk about antimicrobial resistance,”

Khabbaz continued. During World War II penicillin was a wonder drug; now almost everything has become resistant to penicillin. “I think it’s a little sobering,” Khabbaz said. “We have superbugs—we have bacteria that have become resistant to a whole armamentaria of antimicrobial agents.” She pointed out that within our lifetime we’ve basically discovered and lost penicillin and that a challenge for next century is to discover new antibiotics.

“There is also a risk of bioterrorism,” Khabbaz said. “It is difficult to put bioterrorism in any kind of risk analysis mode.” She listed anthrax, lutaremia, smallpox, and plague on the microbial threat list.

Khabbaz concluded by saying that CDC has an updated plan for dealing with emerging threats. She also pointed out that there are many other areas of public health challenges in addition to those she covered in her talk, including genetics, mental health, exercise, nutrition, and aging.



“Biogenetics in Full Bloom: Chasing the Risks”

Sheldon Krimsky

“Biotechnology is said to have developed thousands of years ago when humans first used microorganisms to make bread and wines,” Sheldon Krimsky stated in the opening to “Biogenetics in Full Bloom: Chasing the Risks.” Krimsky explained that the term biotechnology came into popular usage around 1973 or so with the discovery of gene splicing and is the deliberate manipulation of life forms through genetic constituents or other subcellular units. “In contrast to most major scientific and technological revolutions, the new biotechnology was born in a climate of risk,” he said. “Since its birth and throughout its first quarter century, biotechnology has been the target for risk prospecting.”

Krimsky explained that to predict which risks in biotechnology will be of concern in the next 25 years, we must first look at what we now know. For example: within a few years the human genome will be sequenced, the number of prenatal screening tests is increasing and is now available for hundreds of conditions, genetically engineered crops have been dispersed around the world and the foreign genes or the transgenes can transfer to other plants through pollen and can enter the soil, some nations have stockpiled biological weapons while others are preparing new strategies against the possibility of bioterrorism, it is possible to transfer an allergen from one food to another by introducing new genes into a conventionally bred variety, and certain gene sequences confer to their human hosts a higher risk of contracting certain diseases.

Using this knowledge, Krimsky predicted the kind of risks that will be of concern in three areas: biogenetic warfare, genetic screening, and genetically modified food.

About biowarfare, Krimsky said that as research continues into genetic processes that add to our understanding of virulent pathogenesis and host resistance, several outcomes may elevate the risks of biogenetic weapons. “First it may be possible to tailor make pathogens to function on specific genotypes,” he said. “This knowledge of personalizing drugs to one’s immune system may ultimately be used to genetically equip certain pathogens to be effective within certain genotypes or among people with certain marker sequences. At the same time the knowledge gained from the human genome project and the human genome diversity project where racial or ethnic genetic markers are identified can increase the risk that a new form of ethnic cleansing could emerge.” He said discussions on biological warfare have not eliminated the risk of biological weapons, and he questioned if the new advances in genetics will provide temptations to world nations and terrorist groups to develop a new generation of biological weapons that could be directed at people, crops, or animals in order to create instability in the economy. “This possibility cannot be ruled out so long as nations have not committed themselves both internationally and domestically to abolishing the research and production and stockpiling of biological weapons,” he stressed.

Krimsky next discussed the psychosocial risk associated with genetic screening. He said if people avail themselves of blood tests that may make it possible to screen for dozens of genetic mutations linked to adult-onset diseases, there will be a chance

of misuse of the information for discrimination and stigmatization of individuals with such markers. “It will take national legislation and vigilance among civil rights groups to minimize the risks of genetic discrimination,” he added.

“A second outcome to the growth of genetic screening tests, even if the information remains confidential, will be the psychological impact on individuals who have availed themselves of such tests,” Krimsky continued. “The risks are those associated with a society that increasingly impels people to screen as new genetic markers are available but has no means to address the angst that accompanies the knowledge that an untreatable illness may enter their lives at some unforeseen time. The way to reduce the psychosocial risk in this case is either to prevent the screening or use it sparingly, only in those cases where therapeutic responses are available.”

Krimsky continued with a discussion about the health risks of biogenetic foods, an issue he said is at the epicenter of concern in the European community and that has only recently reached high levels of concern in the United States, as indicated by the media attention given to it.

“I would consider the odds more favorable than unfavorable that there will be mishaps, health or nutritionally related effects, from genetically modified food if development and commercial introductions of the product continue at the current rate without testing,” he stated. After explaining two models of the plant genome that have different implications for risk assessment, Krimsky said, “All in all I’d say that this lottery of transgenic crops is likely to produce some undesirable products, albeit at an unknown frequency and with unknown consequences.”

He pointed out that in the last ten years we have begun to appreciate the complexity in transgenic crops: transgenes in pollen that can affect nontarget species, transgenes that migrate from plant to the soils, and cross fertilization of genetically modified plants with wild species and, because of the uncertainty, “we should be vigilant and think more carefully about how we experiment with the world’s food supply in this way.”

Krimsky concluded by quoting words which he said seem oddly and eerily relevant today although he wrote them in 1991 in a book titled *Biotechnics in Society*: “Too many questions related to the effects of biotechnology are defined outside the responsibility of government. Too many of our agencies of government conceive of their roles as promoting innovation and development rather than assessment and selectivity. Too many of those in whom we expect objectivity have vested interests in the financial success of the technology. The inevitable outcome of this situation is that organized efforts by non-governmental groups give up working with federal agencies and work directly with the public, and scientists will get a special status in society. We need new institutional models to examine the whole system, in fact, of innovations in biotechnology and must rise above the current fragmentary approach defined by the regulatory sphere.”



“Information Technology, Risk, and Risk Analysis in the (Early) 21st Century”

M. Granger Morgan

M. Granger Morgan presented the talk “Information Technology, Risk, and Risk Analysis in the (Early) 21st Century,” which he wrote with his son, Frederick M. Morgan, of Color Kinetics Inc. “I figure if you have a son who actually knows something about the subject, more than you know about the subject to begin with, you might as well draw upon his expertise,” Morgan explained regarding his son’s graphics expertise that he put to use for his talk.

The Morgan and Morgan presentation began with a discussion of how difficult it is to make predictions into another century, using as an example a list of information technology-related advancements that someone in 1899 would have had to predict for 1999.

Morgan used dramatic anecdotes to show this difficulty, including the time in 1943 when the President of IBM said, “I think there is a world market for maybe five computers.” The reality is that in 1999 the Internet, for example, had grown to consist of tens of thousands of networks with tens of millions of host computers.

After a discussion on the capabilities of the human brain and current technology, Morgan said, “These capabilities will go together in an enormous number of ways to produce new or dramatically more powerful services and applications. There is no way to anticipate everything that will emerge . . . nor is there enough time to outline everything we can now imagine.” He then presented a few illustrations of capabilities that may emerge in the next century (even in the next few decades) in the areas of sensors, communication, and computing.

Included in examples of sensors installed in home appliances,

there may some day be a refrigerator that will order more eggs when the last one is taken out. Security monitoring in “Smart Rooms” will determine who belongs in a room and who doesn’t. Intelligent “eyes” will be able to watch critical systems and never get tired in their effort to identify potentially hazardous situations before they develop. Other advanced visualization techniques could be used to simulate surgery before the physician actually performs it.

Along with identifying many of the systems that will advance technology, Morgan pointed out the need for the establishment of a systematic way to look out for the long-term interests of individual users and the society as a whole. Among the risks/concerns of the technological advances is that there could be an invasion of privacy and social manipulation and control by commercial and other entities in addition to computer/information terrorism.

Morgan said there are a number of challenges the SRA needs to think about as it enters the 21st century. These include the use of the new computer and information technology to make the world a safer and better place, the identification of strategies and policies that will allow society to anticipate and manage the risk of information technology without stifling free enterprise and innovation, and the education of a new generation of people to combine the new technology with the knowledge of risk analysis, risk management, and policy analysis.

Morgan ended his talk by stating, “Clearly, there is no risk that SRA will run out of important things to do in the 21st century.”



(Awards, continued from page 7)

Fellow John S. Evans, Sc.D.

Dr. John S. Evans is Senior Lecturer and Codirector of the Program in Environmental Science and Risk Management at the Harvard School of Public Health. Since joining the Harvard faculty in 1983, Evans has developed and taught a variety of courses in exposure and risk assessment.

His research has focused on characterizing uncertainty in estimates of environmental health risks and in applying the methods of decision analysis and value of information analysis in support of environmental health decisions.

Evans is a member of the U.S. EPA SAB (Drinking Water Subcommittee) and has served as the Area Editor for Environmental Health of SRA’s Journal, *Risk Analysis*, since 1998.

Evans was a Charter Member of the SRA and served as President of the New England Chapter of SRA.



Fellow Dr. Gail Charnley

SRA Past President Dr. Gail Charnley has had a consulting practice in environmental health risk policy, HealthRisk Strategies, since 1998. Previously she was executive director of the Commission on Risk Assessment and Risk Management.

Charnley has served as director of the Toxicology and Risk Assessment Program at the National Academy of Sciences and as project director of several National Academy of Sciences committees. She was Practice Director for Risk Management at the Weinberg Group Inc. and has chaired several U.S. Army Science Board committees. She currently holds an adjunct faculty position at the Harvard Center for Risk Analysis.

Joining SRA in 1991, Charnley was elected Councilor in 1994 and served as chair of both the Public Policy and the Gifts and Grants Committees. She has been actively involved in planning the SRA’s annual meetings and was 1999 SRA President.





News and Announcements

Partnerships for Environmental Protection and Sustainability: Research, Policy, and Education

The North Atlantic Chapter (NAC) of the Society of Environmental Toxicology and Chemistry (SETAC) announces its 6th Annual Meeting in Newport, Rhode Island, on 14-15 April 2000 at the Newport Harbor Hotel and Marina.

Keynote presentations will be given by David Pimentel, Ecologist at Cornell University in Ithaca, New York, ("Population, Environment, and Sustainability") and Jerry Taylor, Director of Natural Resource Studies at Cato Institute in Washington, D.C., ("Global Population Growth: A Cause to Celebrate").

All individuals from government, academia, business, and public interest groups with technical backgrounds in chemistry, toxicology, biology, ecology, atmospheric sciences, health sciences, earth sciences, and engineering are invited to attend.

Preregistration for the SETAC NAC Annual Meeting is due by 15 March 2000. For more information contact Kay Ho at 401-782-3196 (ho.kay@epamail.epa.gov) or Cornelia Mueller at 401-847-4210 (cornelia@mtg.saic.com).

Papers on topics of environmental chemistry, environmental toxicology, ecological risk assessment and risk management, regional environmental issues, and environmental policies are invited. Abstracts are due by 1 March 2000. For more information regarding submittal of abstracts please contact Kay Ho (contact information above).

Workshop on Modeling of Developing Systems

The XXIV International Workshop on Modeling of Developing Systems: Risk Assessment of Ecological, Technogenic, and Sociogenic Accidents (MDS XXIV-2000) will be held 5-10 March 2000 in the Slovak Republic, Bratislava, Liptovsky Mikulash.

This workshop is devoted to the problem of data analysis in various areas of practical activity (economy, ecology, medicine, sociology, public relations, crediting, bank operations).

For more information contact Dr. Vasyl Yanenko, Head of Laboratory of Mathematical Modeling in Ecology and Medicine, Glushkov Institute of Cybernetics, National Academy of Sciences of Ukraine, 40 pr. Acad. Glushkova, Kyiv 03680, Ukraine; e-mail: janintas@carrier.kiev.ua; phone: +38 044 2660289, 2662113; fax: +38 044 266089 (Web site: <http://www.ln.com.ua/~janintas>).

Toxic Turmoil: Psychological and Societal Consequences of Ecological Disasters

On 17 March 2000 an international symposium will be held in Utrecht, the Netherlands, on the psychosocial and societal effects of disasters during which large numbers of people have become exposed to radiation, chemical toxins, or other health hazards with potentially long-lasting, adverse impacts on health, featuring key authors on this topic. The symposium is targeted towards practitioners, researchers, health officials, and policy makers who may be confronted with this type of incident.

For more information contact Ms. Jorunn Labordus, P.O. Box 80.125, NL-3508 TC Utrecht, the Netherlands; e-mail J.Labordus@fbu.uu.nl; phone +31 30 2532728; fax. +31 30 2535851.

Bayesian Approaches to Human Health Risk Assessment

The workshop "Bayesian Approaches to Human Health Risk Assessment: Combining Different Kinds of Information" will be held in Williamsburg, Virginia, 27-29 March 2000. Sponsors are the Society for Risk Analysis, the Environmental Protection Agency, and Resources for the Future, and the workshop is intended to introduce Bayesian logic as a way to structure complex assessments for those who are not familiar with this technique. Attendance is limited.

For further information contact Jim Wilson at Resources for the Future (wilson@rff.org). ◇◇

SRA Year 2000 International Symposium on Risk Analysis

The Society for Risk Analysis (SRA) is holding a Year 2000 International Symposium on Risk Analysis 21-24 June 2000 at Arlie House in McLean, Virginia, that will provide the foundation and planning for one or more world congresses in subsequent years. The planning committee consists of SRA representatives from the United States, Europe, and Japan.

The objective of the symposium is to begin an international dialogue on the state of the field and new directions, focusing on selected key issues associated with methods and practice in risk analysis. It will address how to build connections between SRA and other professional groups working in risk analysis-related areas and how to bridge the gap between risk analysts/researchers and risk managers/regulators.

One part of the symposium will be devoted to the exploration of the themes of efficiency in risk management, equity in risk management, and integrating analysis and deliberation in risk management. A series of symposium papers will provide a foundation for these themes. Paper topics will include how risks are perceived and valued, variability in exposure and susceptibility, risk and justice, models for analysis and deliberation (analytic-deliberative approach), risk and uncertainty, extreme and rare events, global change and transboundary risks, risk and developing countries, risk and efficiency, and approaches to dose-response estimation.

Another part of the symposium will be devoted to integrating the themes. A third component will be sessions on process issues covering the capacities of international institutions to analyze risk and education and training for risk analysis. Finally, planning for the first world congress on risk analysis will begin at the symposium.

For more information on the symposium contact the Secretariat, phone: 703-790-1745 or e-mail: SRA@BurkInc.com.



Committees

Sections and Chapters Committee

Jo Anne Shatkin, Cochair

The Chapters and Sections Committee met on 7 December during the 1999 Society for Risk Analysis (SRA) Annual Meeting in Atlanta. Chapter presidents discussed activities they have organized, including workshops, seminars, dinners, and conferences. Some common challenges were identified, including how to increase participation, hold meetings at a lower cost, and make meetings more accessible to members across a large geographic area. The committee chairs will soon be providing chapters with a list of SRA national speakers available to meet with chapters. Chapters will also receive a chapter handbook. Committee chairs will be communicating with each chapter to discuss how to best support that chapter's efforts. Anyone interested in forming a chapter or section, or discussing chapter development, should contact Charlie Menzie (x2856) or Jo Anne Shatkin (x2820) at 978-453-4300.

Publications/Electronic Media Interface Committee

Steve Brown, Interim Webmaster

James P. Butler, a charter member of the Electronic Media Committee, has been selected to replace Stephen L. Brown as Webmaster for the Society for Risk Analysis (SRA) Web site. Brown has asked to be relieved of the responsibility after three years of volunteer effort. Mitchell J. Small will chair a reoriented Publications/Electronic Media Interface Committee that will give guidance and support to Butler. Small replaces H. Christopher Frey, who has been the chief liaison between the Webmaster and the Council for the first three years of the site's existence.

The site, which can be found at <http://www.sra.org>, continues to attract more and more visitors. Recently, the visitation rate has been in the vicinity of 4,000 per month and cumulative visits have now reached about 75,000. Over the next few months, Butler hopes to improve the site in a number of ways. Visit it often to see what's new.

Public Policy Committee

Jack Fowle, Chair

The Society for Risk Analysis (SRA) Public Policy Committee cosponsored a luncheon briefing with the American Chemical Society's Risk Education Project in Washington, D.C., on 9 December 1999. The topic, "Regulation of Air Quality: The Science Behind the Controversy," drew a crowd of 70 people to room B-338 in the Rayburn House Office Building, including 40 Congressional staffers, 3 Executive Branch staffers, and 2 reporters.

The 1997 review of the air quality standards was one of the most controversial recent environmental debates. The Environmental Protection Agency (EPA) tightened the limits on ozone and particulate matter (PM) allowed in air and established a program to collect new scientific data in preparation for the next review in 2002. Even though this date is about three years away, the issue is still getting considerable public attention. Court challenges to the 1997 standards and debates about access to scientific data in decision making captured press

attention throughout 1999. This briefing examined the state of the science on ozone and particulate matter and considered how it might affect ongoing and future policy decisions.

Jonathan Bender, of the Hogan and Hartson law firm, opened the briefing by explaining that Section 108 of the Clean Air Act requires EPA to set both a primary standard, which establishes the maximal permissible concentration of the pollutant in the ambient air that will allow protection of the public health with an ample margin of safety, and a secondary standard that provides for protection of the public welfare for each National Ambient Air Quality Standard (NAAQS) pollutant. The Act also requires EPA to revisit NAAQS every five years, and, if necessary, to revise the standards in light of the most recent scientific information. In 1997, EPA completed a review and revision of the NAAQS for two criteria pollutants, ozone and PM, setting new, more restrictive standards for both. Although the Agency based the new standards on a massive amount of evidence, including thousands of pages of documents, the standards were tremendously controversial.

Predictably, everybody sued EPA, including industry, several states, and environmental groups. The Court of Appeals for the D.C. Circuit found that EPA's construction of the Clean Air Act violated the so-called "delegation doctrine." The Court said that EPA had failed to state "how much is too much" with respect to the Agency's conclusion that there is no safety threshold for ozone, or in other words, no level of ozone below which nobody would be harmed. (Remember, the Clean Air Act requires primary standards to not only protect public health, but to do so with an adequate margin of safety.)

Courts usually deal with issues of this sort by finding that the Agency acted arbitrarily and capriciously by not adequately explaining the basis for its decision. This approach doesn't call into question the constitutionality of the statute under which the regulation was promulgated. Under Supreme Court precedent, a statute that fails the delegation doctrine, by contrast, is unconstitutional. As it happens, however, the Supreme Court has only invalidated statutes for failing the delegation doctrine twice, both in 1935. Otherwise, the delegation doctrine has largely been a historical footnote. However, if the delegation finding stands with respect to ozone, it raises the concern that many of the regulatory statutes enacted in the past few decades may also be ruled unconstitutional. Thus, this case has raised high stakes.

The government appealed the decision to the full D.C. Circuit, and the appeal was rejected. EPA has asked the Justice Department to appeal the case to the Supreme Court. It should be noted that the D.C. Circuit also found EPA's PM standard to be arbitrary and capricious in part and remanded that part of the rule back to EPA, as well.

After setting the stage with respect to the legal and policy issues surrounding this issue, Bender then introduced Dr. Daniel Greenbaum, President and Chief Executive Officer of the Health Effects Institute. He noted that the PM standards are based on data from many short-term and a few longer-term epidemiology studies. Over 40 short-term epidemiology studies have been conducted to look at associations between daily variation in PM and health. A consistent small increase in mortality and hospitalization has been observed. Just three longer-term epidemiology studies have been conducted to evaluate

the association between PM exposure and mortality. These are the Harvard Six Cities Study, the Pope American Cancer Society Study, and the Abbey/Adventist study. The results suggest that high-pollution cities have greater mortality than do low-pollution cities, with a 2.0–2.5% increase in mortality for every 10 microgram increase in PM exposure. Questions about the short-term studies are (1) Are the results consistent and coherent?, (2) What is the role of PM vs. other pollutants in the disease etiology?, and (3) How early are people dying (is the increased mortality merely a reflection of very old people dying a little bit earlier than they would have otherwise died)? Questions about the longer-term studies arise because they cannot be easily replicated and because scientists wonder if other factors explain differences in mortality between high- and low-pollution cities.

Greenbaum noted that there are new studies underway to tease out the contribution of PM vs. other pollutants to mortality, including the National Mortality, Morbidity, and Air Pollution Study. These may shed some light on this issue, but it is too early to tell. He then summarized the results from the three longer-term studies and the Health Effects Institute Reanalysis of the Harvard Six Cities Study and noted the issues surrounding trying to determine if there is a threshold, in trying to understand what we are exposed to, in trying to understand mechanisms of disease, and in trying to link effects to sources of exposures. He noted that not all particles may be created equal. Not all may contribute to effects. Of those that do, some may be more toxic than others. Ideally cost-effective control programs will be built on an improved understanding of these issues. Much research is underway on this point but more is needed.

Bender then introduced Dr. Joe Mauderly, of the Lovelace Respiratory Research Institute, whose messages built on the points raised by Greenbaum. The bottom line is that there is a relationship between air quality and health, and while we have made great progress in cleaning up the air, there are still health impacts of air pollution. The problem is that the cleaner the air, the more difficulty we seem to have understanding the residual effects with respect to causation, risk, and cost-benefit. We know that dirty air aggravates existing heart-lung illness and that levels of individual pollutants at monitoring stations are statistically associated with health outcomes. We do not understand well the roles of individual pollutants and combinations, the importance of unmeasured air contaminants, what the “safe” levels of exposure are, and what the long-term effects are. Mauderly summarized the current hypotheses about key PM characteristics and current hypotheses about mechanisms of injury and determinants of individual impact, including susceptible populations, by way of noting that much remains to be known about the risks of PM. He summarized the recent National Academy of Sciences/National Research Council recommendations and the Council’s funding recommendations for the next decade, which are in excess of \$50 million per year for the next several years.

Mauderly then described trends in toxicological research using laboratory studies which focus on specific PM characteristics, animal models of susceptibility, and mechanisms of response and identified several challenges facing scientists and regulators. The first challenge is how to decide when a response is sufficiently adverse that regulatory steps should be taken to protect public health given the scale of adversity, which ranges all the way from receptor binding through gene activation and

cellular response, to organ dysfunction. The second challenge is how to place the roles of individual pollutants and sources in their proper context. Our single-pollutant focus causes a problem. We regulate, debate, and study air pollutants in a “one-at-a-time” “revolving door” manner, yet nobody ever breathes one pollutant at a time. This issue becomes more important as the air becomes cleaner. Little effort has been aimed at developing alternate strategies, but there is a growing initiative to look at copollutants in all PM research. Mauderly believes that we are on an acceptable course: both thinking and research are evolving rapidly, a substantial research momentum exists, and to date, regulatory decisions have not been refuted, in any serious way, by our evolving knowledge. This is not a time to slow down because we may have entered into an important paradigm shift in the evaluation of pollutants in terms of cumulative risk, not on a one-at-a-time basis.

History Committee Think Back 20+ Years

Richard Schwing, Cochair

Were you at Asilomar in '75 or perhaps at the General Motors Risk Symposium in '79? These and similar events led some folks from Stanford, the Electric Power Research Institute, the National Academy of Sciences, and Oak Ridge National Laboratory to organize what is now the Society for Risk Analysis (SRA).

Former SRA Presidents Paul Deisler ('86-'87) and Dick Schwing ('88-'89) would welcome any material that will bring our history alive for our existing membership. Approximately 120 founding members are still active in the Society.

We'll have the official minutes and other documents to provide a framework, but your memories and anecdotes will add color to our uncertain gambles in 1980. Several landmarks along the way will be worth noting for our current membership, which is scattered across 50 nations. Ideas and contributions from all of our 2,500 members are welcome.

Send your thoughts to Paul Deisler, 2001 Mountain View Road, Austin, TX 78703; fax: 512-480-9810; e-mail: sinprisa@earthlink.net; and/or Dick Schwing, 2335 Scotch Pine Drive, West Bloomfield, MI 48323; fax: 313-667-9597; e-mail: richard.schwing@gm.com. ◇◇

Call for Nominations for SRA Officers

The Society for Risk Analysis Nominating Committee invites nominations for the following offices in the Society's 2000 elections:

President-elect Treasurer Three Councilors

The Treasurer serves for two years. 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 **28 April 2000** to the Chair of the Nominating Committee: Yacov Haimes, Center for Risk Management of Engineering Systems, 112 Olsson Hall, Charlottesville, VA 22903; e-mail: haimes@virginia.edu; phone: 804-924-3803; fax: 804-924-0865.



SRA-Europe

“Foresight and Precaution” 14-17 May 2000, Edinburgh, Scotland

Organized jointly by the Society for Risk Analysis-Europe (SRA-E), the European Safety & Reliability Association (ESRA), and the United Kingdom Safety and Reliability Society (SaRS), “Foresight and Precaution,” the SRA-E and ESREL 2000 Annual Conference, will be held 14-17 May 2000 at Edinburgh, Scotland.

The opening session of the conference will feature three keynote speakers: Donald Dewar, First Minister of the Scottish Parliament; Ken Collins, Chairman of the Scottish Environmental Protection Agency; and Jenny Bacon, Director General of the United Kingdom Health and Safety Executive.

For more information and to register on the Internet go to <http://www.Risk-2000.co.uk>. A regularly updated version of the full programme and complete details of the conference will be posted on this Web site.

The annual ESREL and SRA-E series of conferences have resulted from European initiatives to promote the exchange and cross-fertilization of ideas and experience in risk analysis and management and in safety and reliability assurance. The conferences have grown into major international events attracting contributions and participants from the European Union, Eastern Europe, the United States, Australasia, and the Far East.

The last few years have seen an increasing recognition of the importance of social factors in influencing the role and use of risk assessment, including public perceptions of risk, com-

munication with stakeholders, and public trust and confidence in decision-making processes for novel and contentious technologies. For the first time, in 2000, these conferences will be combined to explore these related areas and to provide a forum for consideration of developments in methods of risk assessment and management and the changing public and policy context which these methods need to address. The conference theme, “Foresight and Precaution,” reflects societal concerns to foster technological innovation and development, while guarding against untenable risk or unsustainable exploitation.

SRA-Europe Executive Committee

SRA-Europe (SRA-E) held a meeting of its Executive Committee in the Hilton Hotel at Heathrow Airport on 22 January 2000. New office bearers elected at this meeting were President-elect Jose Manuel Palma Oliviera, University of Lisbon, Portugal; Treasurer Peter Wiedemann, Research Centre Juelich, Germany; and Chair of the Nominating Committee Jean Brenot, IPSN, France; supported by Gisela Boehm, Ludwigsburg Institute, Germany. Other members of the Executive Committee are Chair and SRA-E President Joyce Tait, SUPRA, University of Edinburgh, Scotland; Past President Britt Marie Drott Sjöberg, University of Trondheim, Norway; Secretary Claire Mays, Institut Symlog, France; Ioannis Papazoglou, NCSR, Demokritos, Greece; and Ragnar Löfstedt, University of Surrey, England (currently on sabbatical leave at Harvard University). ◇◇



SRA-Japan

The History of the Society for Risk Analysis-Japan

Saburo Ikeda, Secretariat

The Society for Risk Analysis-Japan (SRA-J) began after Professors S. Ikeda and K. Kawamura of Vanderbilt University, U.S.A, organized a joint workshop in 1984 on “Risk Management in the U.S. and Japan.” The workshop was cosponsored by the U.S. National Science Foundation and the Japan Society for the Promotion of Sciences and was conducted with a limited number of participants. By that time, Japan had not established a research arena of risk analysis such as that in the United States. Distinguished members of the SRA participated at the Tsukuba Joint Workshop. Among them were Elizabeth Anderson, Vincent Covello, Lester Lave, Roger Kasperson, Paul Slovic, and Curtis Travis. The Japanese participants were very much impressed by the disciplinary scope, methodologies, and practices of risk analysis that were conducted in the United States.

Following the first workshop, Professor T. Sueishi of Osaka University, who became the first Japan Section President, and Professor T. Morioka, one of the Section officers, organized a second workshop, where the Japanese participants came to a consensus that Japan should have a society similar to the Society for Risk Analysis (SRA) to promote international cooperation and, in particular, to learn about the advanced level of both

academic and practical studies in the field of risk analysis. The Section’s inaugural meeting and first elections were held 25 June 1988 in Tokyo, with about 60 members from academics, governmental research institutions, and industry (insurance, power generation, pharmaceutical, etc.).

The SRA-J bylaws are similar to those of the SRA in the United States, but with some modifications: (1) corporate membership (industry, institution, etc.), (2) membership for Japan Section (not necessarily for the SRA), and (3) financial independence from the SRA.

The Society for Risk Analysis-Japan Now

Current membership (September 1999) includes 17 corporate members, 380 full members (49 members were U.S. SRA members in 1998), and 40 student members.

Officers for 1998-2000 are President Thoru Morioka, School of Environmental Engineering, University of Osaka; Vice President Yasuhiro Sakai, Institute of Social Sciences, University of Tsukuba; 27 Councilors; and a Treasurer.

Past Presidents include Professor Tomitaro Sueishi, Osaka University (1988-1990), Dr. Eizi Yokoyama, Dean, National Institute of Public Health (1990-1992), Professor Tomio Kinoshita, Kyoto University (1992-1994), Professor Saburo Ikeda, Tsukuba University (1994-1996), and Professor Hirohito Hirose, Tokyo Moman Christian University (1996-1998).

For more information on SRA-J contact the Secretariat Office, c/o Professor S. Ikeda, Institute of Policy and Planning

SCI., University of Tsukuba, Tsukuba, Ibaraki 305, Japan; e-mail: srjapan@ecopolis.sk.tsukuba.ac.jp; home page: <http://ecopolis.sk.tsukuba.ac.jp/~srjapan/>.

1999 SRA-J Activities

Major regular activities in 1999 included a Spring Symposium on 18 June in Tokyo featuring "Societal Regulation on Advanced Technologies: Past and Future Perspectives: Two Lectures on Nuclear Energy Problems" by T. Yokokura and G. Markus and panel discussions with 80 participants.

SRA-J held the Autumn Annual Conference 19-20 November at the National Institute of Public Health in Tokyo. With 120 registered participants, 39 papers were presented and conference proceedings (in Japanese with English abstracts) were published.

The program included presentations by S. Kobayashi, A. Sasaki, M. Ohe, K. Koshiyama, K. Shimizu, K. Tomono, N. Tanaka, T. Mizuno, C. Lin, S. Kitoh, S. Ikeda, M. Ikeuchi, K. Noguchi, S. Guo, T. Ohshima, M. Kabuto, M. Kai, A. Nakayama, S. Morisawa, H. Kajihara, A. Takao, M. Okura, H. Shuofen, H. Sakakibara, F. Yasukawa, I. Uchiyama, R. Murayama, N. Nakaune, K. Urano, A. Shimizu, T. Yamamoto,

M. Miyahara, K. Tsunoda, H. Hirose, S. Hori, C. Tohyama, Y. Hoshikawa, Y. Nishikawa, and J. Sekizawa.

SRA-J Journal Publications

SRA-J publishes the *Japanese Journal of Risk Analysis* (one or two issues per year since 1989). The contents of the latest issue (Vol. 11, No. 1, Nov. 1999) included an editorial by T. Kinoshita, "Risk Studies: A Treasure Island for Social Psychologists"; a panel discussion by Y. Hagihara et al., "Integrated Management of Environmental Disaster and its Risk Management"; a Tokyo workshop report from the Kyoto International Symposium by I. Uchiyama et al., "Endocrine Disrupter Problems"; and a review paper by N. Nakashima, "Risk Analysis in Food Chemical Safety: WHO's Approach."

The *Journal* also contained papers by the following authors: K. Sato, K. Tunoda, T. Kikkawa et al., J. Sekizawa et al., M. Ueda, A. Omoto, and S. Ikeda.

SRA-J is sponsoring the joint publication of the *Journal of Risk Research* with SRA-Europe, holds research contracts with governmental organizations and corporations, and is planning the publication of "Risk Lexicon," possibly in June 2000. ◇◇



Risk Education Resources

Risk Education Opportunities at the Harvard Center for Risk Analysis

By Tim McDaniels with help from John Evans

This month we continue to introduce some of the major graduate programs in risk analysis. Why not set our sights high and discuss what is arguably the most visible and successful program in our field? The Harvard Center for Risk Analysis (HCRA), headed by John Graham, within the Harvard School of Public Health, offers the North American graduate program most directly oriented to the study and practice of risk analysis. To begin, it has "risk analysis" in its title, which sets it apart from many other graduate programs, where studying risk is part of diverse, more-traditional programs, such as engineering, health, or public policy. The HCRA programs also have a number of young, highly regarded faculty who are among the leaders or future leaders in the field of risk analysis. The scale and diversity of their teaching programs are also notable in terms of the range of risk-related courses offered.

The HCRA faculty is part of two programs at Harvard for students interested in risk issues: (1) the Program in Environmental Science and Risk Management (ESRM), and (2) the Program in Health Policy. The ESRM Program offers both master's and doctoral training for students with interests in using the tools of risk and decision science to inform environmental health policy questions. A brochure for the ESRM (available from HCRA) shows that, at the master's level, this program emphasizes basic knowledge in both the environmental health sciences (epidemiology, toxicology, exposure measurement, and modelling) and decision sciences (microeconomics, cost-benefit and cost-effectiveness, and decision analysis). (Note: this is the first time I have seen microeconomics cast as part of "decision sciences," which is an encouraging sign.)

Why not set our sights high and discuss what is arguably the most visible and successful program in our field?

The program includes a series of core courses in risk analysis (risk assessment, regulatory toxicology, risk management, and communication). It also requires course work in statistics (to the level of regression and analysis of variance) and in environmental health policy and law. While the center does not have a thesis requirement at the master's level, the ESRM program includes a practicum in which students are expected to apply the tools of risk and decision science to explore an issue of importance in environmental health management or policy and to make both oral and written presentations of their work.

At the doctoral level, the ESRM program continues to emphasize both environmental health and risk and decision sciences. Typically one year of course work beyond the master's is involved and includes classes in decision theory, probability theory, statistical inference, and analytical frameworks for policy analysis, as well as further work in the specific environmental health sciences relevant for the thesis.

The Ph.D. program in Health Policy includes tracks in decision sciences, economics, ethics, management, political analysis, and statistics and evaluative science. The decision-science students are associated with the HCRA, and many work in the area of risk analysis. The Health Policy degree has less emphasis on the natural sciences.

The relevant Web sites describing these programs are (1) the general HCRA Web site at www.hsph.harvard.edu/Organizations/hcra/hcra.html; (2) the official register of the Harvard School of Public Health (for the ESRM Program and course descriptions) at www.hsph.harvard.edu/register/eh-ese.html, and (3) the Faculty of Arts and Sciences catalogue (for the Ph.D. in Health Policy) at www.fas.harvard.edu/~healthpl. ◇◇



Specialty Groups

The Food/Water Safety Risk Specialty Group

Debra Street, Interim Secretary

At the Society for Risk Analysis Annual Meeting in Atlanta in December 1999, the Food/Water Safety Risk Specialty Group held the workshop "Microbial Risk Assessment to Improve Food Safety."

Don Schaffner developed this technical workshop, which emphasized Microbial Quantitative Risk Assessment, a new and rapidly evolving tool which has important implications for Hazard Analysis and Critical Control Point and food safety regulations, as well as research and teaching.

The Specialty Group also developed a number of symposia and sessions for the conference that presented information on risk analysis issues posed by hazards in food and water.

If you would like to know more about or join this Specialty Group, please contact Roberta Morales, Secretary, by e-mail (morales@rti.org) or phone (919-485-2661).

Ecological Risk Assessment Specialty Group

Bruce Hope, Chair

Starting in late 1998, members of the Ecological Risk Assessment Specialty Group of the Society for Risk Analysis (SRA) began organizing in preparation for the Society's 1999 Annual Meeting in Atlanta. Our primary goal was to enhance the Group's visibility and participation within SRA, as well as provide more ecology-oriented activities to attract ecological risk assessors to the meeting and, it was hoped, to the Society. I am pleased to report that we were very successful in all these endeavors.

On Sunday, 5 December, we ran a full-day workshop on Introduction to Ecological Risk Assessment and Management, led by Anne Sargent (U.S. Environmental Protection Agency) and Charlie Pittinger (Procter & Gamble), which attracted about 20 participants. Judging from a quick glance at the survey forms it was well received. Interest was expressed in offering this introductory course again, but also in adding one on the technical specifics ("... get out your calculators ...") of actually doing an ecological risk assessment.

Thanks to the efforts of Bill van der Schalie and Bob Fares (who reviewed abstracts on the Program Committee) and Anne Fairbrother, Dwayne Moore, Wayne Landis, Charlie Menzie, Wayne Munns, and Richard Orr (all of whom served as session chairs/organizers), we were able to offer seven full platform sessions on Monday and Tuesday, 6 and 7 December. All sessions went very smoothly, with no more than a minimal number of cancellations and rearrangements, and all were well attended, some almost to capacity. Highlights included a lively discussion on the role of values and morality in ecological risk assessments, the novel use of expected loss of biodiversity as an endpoint, ways of assessing risks from a variety of invasive species, and an interesting twist on calculating critical prey concentrations.

The poster session was also successful but could easily have accommodated more participants. Several people, based on their experiences both at SRA and the Society of Environmental Toxicology and Chemistry, have said that posters are often more interactive and informative than platform sessions. This suggests that we should do more to encourage an expansion of poster opportunities at future meetings.

Following the last platform session on Tuesday, we held the Group's business meeting, along with a mixer. Total attendance was about three times what it was at the 1998 meeting, with 20 or more folks putting in an appearance, several with new-member ribbons.

This is also the first year that our dues statements included a specific opportunity to join this Group (and contribute \$10 to the cause in the process). So, we've made a good start but need to stay with it in preparation for the 2000 Annual Meeting in Washington, D.C. By the time this *newsletter* is out, we'll be looking for session and symposium themes (and chairperson/organizers), as well as ideas for workshops. We'll also need a sponsor for next year's business meeting/mixer. So if you'd like to get involved, please contact me by phone (503-229-6251) or e-mail (hope.bruce@deq.state.or.us).

Risk Science & Law Specialty Group

Wayne Roth-Nelson, Chair

The Risk Science & Law Specialty Group is reorganizing so members will have closer communications. Rather than making spurious contacts via phone, fax, and snail mail, members will rely on an e-mail network supplemented by our RiskWorld Web site at www.RiskWorld.com/RiskScienceLaw. Having a current e-mail address for each member is critical. Current members or those wanting to register as new members should submit up-to-date e-mail addresses to rothnelson@cs.com.

Both technical and business communications, including voting on amendments to bylaws and election of officers, will occur at our Web site or by e-mail network. Our annual business meetings at the Society's annual meetings were too limited in participation, so the 1999 business meeting was not held in Atlanta. Instead, an Internet business meeting will be held early in 2000, following the election of officers using an e-mail ballot.

The nominees for a full slate of new officers are:

New Chair:

Wendy Wagner, Case Western Reserve University School of Law. Current Executive Committee member. Special Interest: Using the courts to improve the accountability of policy decisions contained in government agency risk assessments.

Membership Vice-Chair (New Officer Position):

John Applegate, Indiana University School of Law. Current Executive Committee member. Special Interests: Legislative proposals to reformulate regulatory risk assessments; public participation in risk-based regulation.

Internet Vice-Chair (New Officer Position):

David Brenner, Brenner Consulting (Health Risk Assessment). New Specialty Group member. Special Interest: Use of computers for mathematical modeling, chemistry, environmental science, and human health risk assessment.

Robin D. Smith, Micromedex, Inc. New Specialty Group member. Special Interests: Global computer applications of knowledge bases for health care and the environment; use of the Internet in environmental health and safety policy development.

International Vice-Chair (New Officer Position):

George R. Oliver, Global Exposure and Risk Assessment Group, Dow AgroSciences. New Specialty Group member. Special Interest: Worldwide health and ecological risk analysis applied to regulation and needs of the agricultural community.

Michael Rogers, Forward Studies Unit, European Commission. New Specialty Group member. Special Interests: Risk management and technological uncertainty; sustainable natural resource management, clean technologies, and biotechnology.

New Secretary-Treasurer:

Ginny Sublet, Sublet & Associates (Environmental Toxicology). Current Executive Committee member. Special Interest: Communicating scientific information to judges and juries and risk management programs to the public.

New Executive Committee (Five Members):

Russellyn Carruth, Environmental and Occupational Health Sciences Institute. Special Interests: Research projects on law-and-science issues; application of epidemiological data to causation and risk issues in toxic injury litigation.

James Hammitt, Harvard University School of Public Health/Center for Risk Analysis. New Specialty Group member. Special Interest: Development and application of quantitative methods to health and environmental policy.

Wayne Roth-Nelson, Roth-Nelson Risk Science. Specialty Group founder and original Chair. Special Interests: Science in support of toxic risk regulation and litigation; improved use of quantitative risk analysis in toxic injury lawsuits.

Vern R. Walker, Hofstra University School of Law. Special Interest: Uses of risk assessment in toxic tort litigation, disease or injury causation in specific individuals, and risk assessment in international trade disputes.

Jonathan Wiener, Duke University Law School/Nicholas School of the Environment. Special Interest: Cost-benefit and risk-versus-risk analysis applied to regulatory standards, particularly for air pollution control.

It is anticipated that new officers will poll the members to see what new directions should be taken by an expanded membership whose opportunities to participate in the Society's annual meetings may be limited to relatively few.

Risk Communication Specialty Group

Ragnar Löfstedt, Chair

The Risk Communication Specialty Group (RCSG) of the Society for Risk Analysis (SRA) held its annual business meeting on 6 December 1999 at the Marriott Marquis in Atlanta. Approximately 30 people attended the meeting, of which half were new attendees.

The group thanked outgoing chair Richard Rich for his work during the year and installed Ragnar Löfstedt (University of Surrey, UK/Harvard), following a vote at the business meeting, as Chair for 2000. Ann Bostrom (Georgia Institute of Technology) was elected Vice-Chair/Chair-elect and Katherine McComas (Cornell University) was elected Secretary-Treasurer at the meeting. In addition Cliff Sherer (Cornell University) and Bob Griffin (Marquette University) were elected to the Executive Committee.

Among the topics discussed were (a) charging an RCSG membership fee of \$10 (waived for all students) to help fund student awards and fellowships, and possibly mixers. This was approved at the business meeting; (b) setting up a list server for RCSG to allow members to communicate with each other about forthcoming conferences, good risk communication papers, and research opportunities. Richard Rich (former chair of the board and professor at Virginia Tech) agreed to be in charge of arranging this list server; (c) special sessions for next year's SRA meeting. Ragnar Löfstedt is interested in promoting international participation in the year 2000 Annual Meeting and encouraged members of RCSG to arrange sessions on risk communication issues related to trade and genetically modified organisms. If you have an interest in participating in or organizing such a session, please contact Löfstedt (rlfsted@hsph.harvard.edu).

Special Call for Papers

The Specialty Group issued a call for graduate student risk communication research papers for the 2000 SRA meeting. The author of the top student paper will be awarded a \$500 prize provided by Exxon/Mobil Corporation, as arranged by former RCSG Chair Steve Lewis of Exxon. To qualify for the competition, graduate students must submit abstracts by the SRA submission deadline and, if accepted for the competition, submit full papers by 15 October. Full papers will be reviewed by an independent panel of RCSG members. The top paper prize will be awarded at the December RCSG business meeting. However, the prize will only be awarded if papers of sufficient quality are received.

More information on the call for papers is available from Löfstedt by mail, e-mail (above), or phone (617-432-1723); or from Ann Bostrom (ann.bostrom@pubpolicy.gatech.edu).

Dose Response Specialty Group

Elisabeth Reese, Past President

The Dose Response Specialty Group (DRSG) of the Society for Risk Analysis (SRA) is off to a very strong Y2K under the leadership of these new officers: Peg Coleman, President (peg.coleman@usda.gov), Paul Schlosser, Vice President for

Program Planning (schlosser@ciit.org), and Lynne Haber, Vice President for Education (haber@tera.org).

DRSG Monthly Telecon Meetings

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

New Members

The DRSG welcomes as new members Marc L. Rigas of the U.S. Environmental Protection Agency and Vijaya B. Mylavarapu of CH2M Hill.

1999 DRSG Student Merit Award Winner

The winner of the 1999 Student Merit Award in Dose-Response Assessment was Jeffrey E. Korte, a former student in the Department of Epidemiology at the University of North Carolina at Chapel Hill who is now working at the International Agency for Research on Cancer. Korte presented his paper, "New Strategies for Prediction of Human Cancer Risk," at the 1999 Annual Meeting with four other outstanding students with papers in dose response: Prerna Banati, Boston University School of Public Health; Kevin P. Brand, Harvard School of Public Health; Anna Makri, Clark University; and Frank Ye, National Institute of Environmental Health Sciences. Another student recognized for her outstanding work was Susan C. McKarns of Michigan State University. She was unable to attend the meeting.

For information on applying for the Year 2000 DRSG Student Merit Award, see the following announcement.

Notice to all Students and Graduate Student Programs Student Merit Award in Dose-Response Assessment

The DRSG is pleased to offer a merit award to a student conducting graduate research in dose-response assessment. The research may be on any topic broadly related to dose-response assessment, including but not limited to laboratory investigation, methods development, comparative analyses, mathematical analyses, studies on strengthening the role of dose-response assessment in risk assessment, uncertainty analysis, harmonization, cancer and health effects other than cancer, dosimetry, pharmacokinetics, genetics, and molecular biology. The award amount may vary from year to year, but will be on the order of several hundred dollars. In addition, the SRA annual meeting registration fee will be waived for the winner. Some additional support for travel may be available to the top applicants. All authors should plan to present their work at the annual meeting. If circumstances prevent attendance, the author should arrange for the paper to be presented by a substitute.

The award is merit based and intended to be competitive. The Executive Committee of the DRSG will rely on seven criteria to evaluate submissions: (1) relevance of the topic to dose response, (2) originality of the research (e.g., a reproduced experiment, a modification of an existing study, a whole new line of investigation), (3) significance of the conclusions to-

ward advancement of a principle, line of research, or the field as a whole, (4) degree of complexity of procedures and analyses (development of new, modified, or specialized methods and analytical tools), (5) breadth of the inquiry (multiple phases in a single line of inquiry, sequential outcomes, how much work was done, amount of result), (6) quality of the writeup (clarity, logic, organization), and (7) submitted to or published in a peer-review journal.

Submissions should be made in the form of abstracts. Format and content of the abstracts are at the discretion of submitters. The deadline for submission is 15 May 2000, the latest date deemed practical for evaluation and announcement at the annual SRA meeting in December. Please submit two copies of abstracts to Lynne Haber, Toxicology Excellence for Risk Assessment, 1757 Chase Avenue, Cincinnati, OH 45223, USA; phone: 513-542-7475 x17; fax: 513-542-7487; e-mail: Haber@TERA.org.

Upcoming DRSG Open Fora (7 March, 6 June, 2 October 2000)

The DRSG will sponsor three Open Telefora in 2000 to discuss a controversial issue in dose response. All SRA members are invited to listen and participate! Those interested in more information should contact Peg Coleman (phone: 202-501-7379, e-mail: peg.coleman@usda.gov).

DRSG Specialty Group Contact

For more information on the DRSG or to become a member, please contact Peg Coleman, Food Safety and Inspection Service, USDA, 1400 Independence Ave., SW, Washington, DC 20250; phone: 202-501-7379, e-mail: peg.coleman@usda.gov.



Jeffrey
Korte



Peg
Coleman

Exposure Assessment Specialty Group

Kim Thompson, Past Chair

At the Society for Risk Analysis (SRA) Annual Meeting in Atlanta, Susan Youngren of Novigen Sciences, Inc., began her role as the Chair of the Exposure Assessment Specialty Group for 1999-2000. The Group also elected Richard Reiss of Jellinek, Schwartz & Connolly, Inc., to serve as her successor. The Group jointly sponsored a mixer with the Food/Water Specialty Group that was attended by approximately 60 people. Pamela Williams of Exponent engaged the participants with a discussion of people's perceptions of risks related to conventional and organic produce.

At the mixer, Kimberly Thompson (Past Chair) and Debra Street (Past Chair of the Food/Water Group) thanked the Chemical Manufacturer's Association (CMA) for sponsoring the mixer, and they acknowledged that both groups appreciated the CMA's interest in promoting advancement of risk assessment methods, risk-based decision making, and constructive dialogue between different groups. The Exposure Assessment Specialty Group also established a process for selecting a winner for an annual student award and expects to give the first award at next year's annual meeting.

If you are interested in becoming involved in the Group, please contact Susan Youngren by e-mail at syoung@novigen.com or by phone at 202-293-5374. ◇◇



Chapter News

New England Chapter

Jo Anne Shatkin, President

The New England Chapter of the Society for Risk Analysis (SRANE) has been approached by Boston's Water Authority to participate in an expert review of its entire water and wastewater treatment systems. Water systems experts with an interest in participating should contact Jo Anne Shatkin, Chapter President, at +1 978-322-2820 or jashat@menziecura.com.

SRANE held two membership meetings this fall. The first meeting was hosted by the U.S. Environmental Protection Agency (EPA) Region I on 19 October. As part of the Society for Risk Analysis (SRA) National Speakers Program, Annie M. Jarabek, National Center for Environmental Assessment, EPA, Research Triangle Park, North Carolina, discussed her work on "Mode-of-Action (MOA) Models: Not Just Another Acronym. Risk Assessment Case Studies and Applications." The second meeting, held 10 November 1999, included a presentation by Roger Kasperson, Clark University, National SRA President, on "Risk, Trust, & the Democratic Process," and Ragnar Löfstedt, visiting professor at Harvard Center for Risk Analysis, Lecturer at the University of Surrey, discussed his work on a case study of "International Comparisons on Trust."

The spring schedule includes at least three meetings and a poster session. On 12 January Judy Pederson and Leo Sommaripa of the Massachusetts Institute of Technology Sea Grant Program presented "Using a Dynamic Strategic Planning Approach for Managing Risk of Contaminated Sediments: Examination of the Risks Associated with Capping or not Capping Contaminated Sediments," and visiting scholar Professor Roger Cooke, Applications of Decision Theory at Delft University of Technology, gave a talk on "Scuffles with the National Radiological Protection Board."

On 9 February SRANE hosted a joint meeting with the Massachusetts Licensed Site Professional Association that included a panel discussion on sediment screening levels. Panelists included Rick Sugatt, Massachusetts Department of Environmental Protection Office of Research and Standards; Ken

Finkelstein, National Oceanographic and Atmospheric Administration; Patty Tyler, EPA, Region I; and Jerome Cura, Menziecura & Associates, Inc.

On 8 March Wendy Heiger Bernays and Julie Watts, Boston University School of Public Health, will discuss "Hair Care Products: A Survey" and "Toxicological Assessment: A Community-Based Project in Support of ACE and the Roxbury Environmental Empowerment Project." William R. Corcoran, Ph.D., P.E., of Nuclear Safety Review Concepts Corporation will present "Recent Experiences in the Back End of the Risk Management Cycle."

Lone Star Chapter

Theodora Overfelt, Secretary

The Lone Star Chapter (LSC) Annual Conference: Our annual conference and reception was held on 22 October 1999 at the Four Seasons Hotel in Austin, Texas. Three speakers gave excellent presentations to the group of 24. The first of the speakers was Dr. Chris Corton of the Chemical Industry Institute of Toxicology, Research Triangle, North Carolina, who spoke on "The Use of Gene Array Data in Risk Assessment." He was followed by Mr. William (Chet) Clarke of the Texas Natural Resource Conservation Commission in Austin, Texas, who presented an overview of the "Texas Risk Reduction Program (TRRP)," the new risk assessment rules for Texas. The final speaker was Dr. Robert Ettinger of Equilon Enterprises Westhollow Research Center in Houston, Texas, who talked about "Assessing Subsurface Vapor Migration Into Indoor Air." Hope to see you this October at the 2000 Annual Conference!

Officer Elections: The LSC is currently soliciting nominees for the following officer slots—President-elect, Secretary, and Councilor. Please contact Dr. Stephen King at Toxicology Incorporated (713-222-2127 or via e-mail at toxicking@aol.com) with any questions or names of nominees.

Membership Drive: Local membership forms will be mailed out this month. Dues for 2000 are \$20 and can also be paid with your national dues. ◇◇◇

SRA Call for Award Nominations

The Society for Risk Analysis (SRA) Awards Committee invites nominations for the following 2000 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 2000 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 2000** to Ann Landis at the SRA Secretariat (1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101; fax: 703-790-2672; e-mail: ALandis@BurkInc.com) and to Rae Zimmerman, Awards Committee Chair (Robert F. Wagner Graduate School of Public Service, New York University, 4 Washington Square North, New York, NY 10003; fax: 212-995-3890; e-mail: rz1@is2.nyu.edu).



Journal Notes

Betty Anderson, Editor-in-Chief

We enter the new year and the new century with exciting prospects for *Risk Analysis*, the Journal of the Society for Risk Analysis (SRA). The editorial staff and Editorial Board have been expanded, and we have a new publisher, Blackwell Publishers. These changes ensure that the Journal will continue as the leader in the field of risk analysis and will continue to provide the current, up-to-date literature of importance in our field.

The editorial staff has been altered. We congratulate Suresh Moolgavkar on his appointment to the position of Area Editor for the Health Sciences. John Evans has agreed to become Editor for Special Collections. Our Editorial Board has been expanded to provide additional expertise in several critical areas: biostatistics, epidemiology, and ecological risk analysis. The new board members are Steve Bartell, The Cadmus Group; Richard Burnette, Health and Welfare Canada; Kenny Crump, ICF Consulting; Anne Fairbrother, Parametrix, Inc.; Ron Kendall, Texas Tech University; Charles Menzie, Menzie-Cura & Associates; Michael Newman, Virginia Institute of Marine Sciences, College of William and Mary; Ken Reckhow, Duke University; Alan Smith, School of Public Health, University of California; Wout Slob, National Institute of Public Health and the Environment, the Netherlands; Keith Solomon, Centre for Toxicology, University of Guelph; and Peter Teunis, RIVM, the Netherlands.

We look forward to working with our new publisher, Blackwell. We will expand Journal subscriptions through an

aggressive Blackwell marketing plan which will include making more well-respected libraries aware of our Journal, inclusion of information about the Journal in Blackwell's catalogs, Web sites, displays at trade shows, library conferences, scholarly meetings, and other conferences that Blackwell and its sister company, Blackwell Scientific, attend. Blackwell will also use international business and marketing research trend analysis to direct sales and marketing of the Journal internationally. As a part of this plan, Blackwell will assist the Society in attracting new members and contributors to the Journal. An electronic tracking system to assist editors and contributing authors with papers in the peer-review and publication process is planned, as well as electronic transmission of galley proofs to authors. We hope that in the near future our review process will become totally electronic; this will substantially speed the publication process. In the future, Blackwell will also handle all copyright and reproduction requests for the Society, which will generate additional funds for SRA. Therefore, we look forward to working with our new publisher during an exciting time for the Journal.

Upcoming in the Journal are many book reviews and perspectives articles and several special collections. Our Journal has the obligation to provide our readership with the information that it wishes to receive. Our plan is to further improve the Journal's delivery of high-quality, diverse, and timely information for the scientific community. Ultimately, the Journal must fulfill the expectations of our readers, so we are always interested in your views. ◇◇

1999 Annual Meeting Student Award Winners



The Student Award Winners at the 1999 Annual Meeting in Atlanta were, left to right, Jeff Korte, University of North Carolina; James Kendra, Rutgers University; Arvind Susarla, Clark University; Sandra McBride, Stanford University (not pictured); and Joseph Arvai, University of British Columbia (not pictured). The awards were for \$500 plus complimentary registration for the meeting.

RISK newsletter and SRA Web Site Advertising Policy

Employment openings, 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. Camera-ready ads are accepted at a cost of \$250 for a 3.25-inch-wide by 3-inch-high box. The height of a camera-ready ad may be increased beyond 3 inches at a cost of \$100 per inch.

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

The *RISK newsletter* is published four times a year. Submit advertisements to the Managing Editor, with billing instructions, by 15 January for the First Quarter issue (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*, 525 N. 6th Street, Mankato, MN 56001; phone: 507-625-6142; fax: 507-625-1792; e-mail: mwalchuk@mctcnet.net

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

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



Advertisements

Research Participation Program for U.S. Environmental Protection Agency National Center for Environmental Assessment Cincinnati, Ohio

PROJECT NCEA # 99-2

Integrating Ecological Risk Assessment and Economics to Improve Ecosystem Management

The National Center for Environmental Assessment (NCEA), U.S. Environmental Protection Agency (EPA), is currently seeking to place a postdoctoral researcher with a background in ecological economics. The researcher will be assigned to NCEA's Ecological Risk Assessment Team in Cincinnati, Ohio.

NCEA is presently funding three case studies to integrate ecological risk assessments with economic evaluations at the watershed level. Through a cooperative agreement with the University of Nebraska-Lincoln, NCEA is developing a game-theoretic model of ecological risk and decision making in the Middle Platte River watershed. Another agreement with the University of Tennessee-Knoxville will use discrete-choice models to evaluate ecological-economic trade-offs in the Clinch and Powell River watersheds. The postdoctoral researcher will collaborate with these projects and will design and conduct a similar study in a different watershed. He or she will be expected to help establish and publish relevant theory and practice for this type of integration, to organize a symposium to present and discuss these and related studies, and to edit a proceedings volume. The candidate will work within a multidisciplinary research team environment and may be called upon to consult with other teams performing a variety of risk assessment research.

QUALIFICATIONS: A recent doctoral degree in social science (e.g., resource economics, geography, sociology, natural resources management) with strong quantitative ability and a strong background and research interests that include the environmental sciences, especially ecology, is required. The candidate should also have excellent written and communication skills including publications and presentations. U.S. citizenship or permanent resident alien status is preferred.

The appointment will initially be for full-time research at NCEA for one year, but it is renewable yearly for up to three years. The annual stipend will be based on background and experience. Limited inbound travel and moving expenses are reimbursed according to established policies.

The Postgraduate Research Program for EPA is administered by the Oak Ridge Institute for Science and Education. Please reference Project # NCEA 99-2 when calling or writing for information. For additional information and application material contact Postgraduate Research Program/EPA, Attn: Pat Pressley, Science and Engineering Education - MS 36, Oak Ridge Institute for Science and Education, P.O. Box 117, Oak Ridge, Tennessee 37831-0117; phone: 865-576-5654; fax: 865-241-5220; or e-mail: presslep@ornl.gov.

Sciences International Seeks Risk Assessors and Toxicologists

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

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

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

If interested, please send your résumé to:

Sciences International, Inc.
King Street Station
1800 Diagonal Road, Ste. 500
Alexandria, VA 22314
ATTN: Peggy Sheren
or psheren@sciences.com

Toxicology and Risk Assessment Approaches for the 21st Century • 10-13 April 2000	
Kings Island Resort and Conference Center 5691 Kings Island Drive • Kings Island OH 45034-0906	
An interagency conference sponsored by Tri-Service Toxicology; the National Center for Environmental Assessment, United States Environmental Protection Agency; the Division of Toxicology, Agency for Toxic	Substances and Disease Registry; the National Institute for Occupational Safety and Health; and with the cooperation of the National Research Council/National Academy of Sciences.
Kings Island Resort and Conference Center Reservations \$59.00/Room (single or double occupancy), 2 queen-size or 1 king-size bed, non-smoking rooms available. Cut-off date for reservations is 15 March 2000. Mention US EPA Conference for rates. Phone: 800-727-3050 • FAX: 513-398-1095	Conference information and registration: Ms. Jo McAndrews Conference Coordinator McAndrews & Boyd 5060 Cherry Hill Drive Riverside CA 92507 Phone: 909-787-926 Fax: 909-781-7349 E-mail: sayhijo@empirenet.com



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Paper or Electronic?

The Society for Risk Analysis (SRA) Council has been discussing whether the RISK newsletter should be converted to an electronic format, with members receiving an e-mail notice of when the latest issue will appear on the SRA Web site. The membership now has a choice: Paper or Electronic? Please let the Secretariat know if you would prefer to receive your 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.

Should we go to an electronic-only RISK newsletter? If you have an opinion on the subject, please contact Mary Walchuk, RISK newsletter Managing Editor, 525 N. 6th Street, Mankato, MN 56001; fax: 507-625-1792; e-mail: mwalchuk@mctcnet.net, and let us know what you think.



Member News

Rae Zimmerman

Society for Risk Analysis Past President Rae Zimmerman has been elected a Fellow of the American Association for the Advancement of Science for "diligent and sustained efforts in analyzing impacts of pollution from toxic substances in the environment." ◇◇

Deadline for RISK newsletter Submissions

Information to be included in the **Second Quarter 2000 SRA RISK newsletter**, to be mailed mid-May, should be sent to Mary Walchuk, RISK newsletter Managing Editor (525 N. 6th Street, Mankato, MN 56001; phone: 507-625-6142; fax: 507-625-1792; e-mail: mwalchuk@mctcnet.net) no later than **5 April**.

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