



RISK newsletter

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Phasing Out of MTBE Use Encouraged

Mary Walchuk

Environmental Protection Agency (EPA) Administrator Carol M. Browner and Agriculture Secretary Dan Glickman released on 20 March 2000 a legislative framework to encourage immediate Congressional action to reduce or eliminate use of the fuel additive MTBE and promote safe and renewable alternatives like ethanol. Browner also announced the beginning of regulatory action by EPA to eliminate MTBE in gasoline.

Dr. Bernard Goldstein, Society for Risk Analysis (SRA) 1999 Distinguished Achievement Award Winner, believes this is a good decision but also said this is a problem that was easily preventable. Goldstein, an environmental physician and Director of the Environmental and Occupational Health Sciences Institute (EOHSI) in New Jersey, said in a 16 January 2000 "60 Minutes II" interview that more studies should have been done before the government allowed huge quantities of MTBE to be put in gasoline. "How do you expose a hundred million people to a chemical which you have not adequately tested for its toxicity?" he asked. Calling this a classic case of how not to protect the public, Goldstein added, "This is a chemical that's in gasoline. If I wanted to be sure that I poisoned as many Americans as possible, I'd put something in gasoline. I mean that's what we're all exposed to with the exception of, I guess, a few hermits in the Mojave Desert. Which means that you want to study this even more carefully than you study any other chemical."

MTBE (methyl tertiary-butyl ether) has been used in gasoline since the 1970s, originally in small amounts to help increase the octane of gasoline. According to information on the EPA Web site (<http://www.epa.gov/swerust1/mtbe/mtbfaq3.htm>), "The 1990 Clean Air Act required the Environmental Protection Agency (EPA) to issue regulations that would require gasoline to be 'reformulated' so as to result in significant reductions in vehicle emissions of ozone-forming and toxic air pollutants. The regulations were subsequently developed through negotiations with industry, federal and state governments, and environmental and consumer groups. The resulting gasoline, called reformulated gasoline (RFG)

(MTBE, continued on page 3)

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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

Experience with industrial hazards over the second half of the 20th century has clearly indicated the importance of addressing risks at their sources. After all, the corporations that conduct the research and develop the technology upon which production processes rest have the deepest knowledge of potential risks and managerial options for avoiding them. Then, too, the past several decades have been highly instructive to our understanding of the limitations of regulatory systems and our recognition of the need to enlist industry as a constructive partner in risk management. Changes in industry that may bear upon corporate capabilities and programs of risk management carry high stakes for the overall disposition and handling of industrial risks by society. American industry is facing far-reaching new challenges in a business environment dramatically different from that of previous decades. Indeed, the rapid pace of technological change, and especially the communication and information "revolution," has conspired with growing linkages to an intensely competitive global economy, the wave of democratization sweeping the globe, and the overall transition to a post-industrial service-oriented economy to signal an environment of extraordinary volatility and uncertainty.

Responding to these mounting pressures, corporations during the 1990s experimented with a broad array of restructuring initiatives. In the past, companies routinely laid off workers to counter economic downturns and financial pressures. But in the 1990s, downsizing became a strategic operating style, so that despite a strong national economy, 40-50% of U.S. companies eliminated positions. Bureau of Labor Statistics numbers show that more than one million jobs are lost involuntarily each year. Meanwhile, although blue-collar workers continue to be the most vulnerable to losing their jobs, downsizing in the 1990s has targeted white-collar workers and middle management to an unprecedented extent. But this is only part of the story of the quest for more nimble, more "mean and lean," and more focused corporations. The expanded use of temporary and contract workers and the increased outsourcing of selected corporate functions are also important elements of the "new" corporation. "Reengineering" became the watchword of the 1990s, as, at mid-decade, fully 50% of large U.S. companies reported in an American Management Association poll that they had reengineered part or all of their operations. Downsizing continues aggressively while new workers are hired.

What does all this mean for corporate risk management? The simple answer: we do not know. The trade journals and the management literature abound with war stories of the effects of downsizing on stress and task overload, prioritization of production over safety, loss of health and safety expertise and organizational memory, declines in worker training and education, and possible adverse effects on corporate safety cultures. But these reports are fragmentary, inconclusive, and, not infrequently, contradictory. Surveys of corporate morale suggest significant short-term effects but impacts that tend to dissipate over time. The time is ripe for a searching and systematic inquiry into how the lean and nimble corporation of the future, competing in a fiercely competitive global context, will perform as risk manager and how its special capabilities and assets can best be brought to bear on public health and ecological protection.

A handwritten signature in black ink that reads "Roger E. Kasperson". The signature is written in a cursive, flowing style.

Roger E. Kasperson

(MTBE, continued from page 1)

is cleaner burning and provides the same automotive engine performance characteristics as conventional gasoline. . . . RFG is required to be used in nine major metropolitan areas of the United States with the worst ozone air pollution problems. In addition, many other areas with ozone levels exceeding the public health standard have recognized RFG as being a cost-effective measure for protecting public health and have voluntarily chosen to use RFG.” MTBE is the most widely used gasoline oxygenate.

“Basically when the U.S. government put MTBE in gasoline in relatively high amounts in the winter of 1992, people started complaining in various areas of the country about symptoms,” Goldstein said. “The New Jersey state legislature asked us at EOHSI to take a look at what was happening. We did a couple of quick studies having to do with exposure and health effects. At the time there was very little information available. I was surprised by how little information was available.” EOHSI scientists reported their findings and tried to follow up the studies. “Again, I was surprised at how little opportunity there was, despite the controversy, to do additional research,” Goldstein said. “There was very little funding. The government repetitively held meetings about MTBE. At each meeting research was requested but almost no funding was put into getting research. Instead another meeting was held.” Unfortunately, while MTBE has been used to reduce vehicle emissions of air pollutants, it has also been linked to groundwater pollution, a potential problem that Goldstein said was identified years ago.

On 30 November 1998, a Blue Ribbon Panel of experts was appointed by Browner to investigate concerns of MTBE being found in some water supplies. According to a 27 July 1999 report (“The Blue Ribbon Panel on Oxygenates in Gasoline: Executive Summary and Recommendations”), the use of MTBE in the RFG program has resulted in growing detections of MTBE in drinking water. The report states that “MTBE, due to its persistence and mobility in water, is more likely to contaminate ground and surface water than the other components of gasoline. . . . MTBE has been found in a number of water

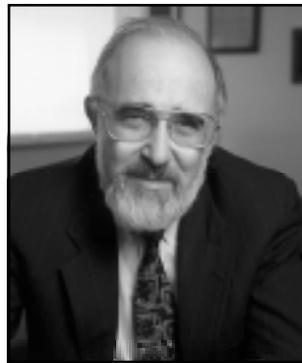
supplies nationwide, primarily causing consumer odor and taste concerns that have led water suppliers to reduce use of those supplies. Incidents of MTBE in drinking water supplies at levels well above EPA and state guidelines and standards have occurred, but are rare. The Panel believes that the occurrence of MTBE in drinking water supplies can and should be substantially reduced.”

In their March announcement, Browner and Glickman outlined the recommendations being sent to Congress to provide an environmentally sound and cost-effective approach to reducing or eliminating the use of MTBE: “First, Congress should amend the Clean Air Act to provide the authority to significantly reduce or eliminate the use of MTBE.

This step is necessary to protect America’s drinking water supplies. . . . Second, as MTBE use is reduced or eliminated, Congress must ensure that air quality gains are not diminished. . . . Third, Congress should replace the existing oxygenate requirement in the Clean Air Act with a renewable fuel standard [promoting continued growth in renewable fuels like ethanol] for all gasoline.” Browner also announced that the EPA issued an Advance Notice of Proposed Rulemaking under

Section 6 of the Toxic Substances Control Act, which gives the EPA authority to ban, phase out, limit or control the manufacture of any chemical substance deemed to pose an unreasonable risk to the public or the environment. She said this is a regulatory process aimed at phasing out MTBE.

While Goldstein believes these efforts are good, he feels they have come a little late. “If we had paid more attention to risk/risk trade-off issues we would have been better off,” he said. “The MTBE was put to use before anybody complained about it because they didn’t do the studies first.” He said MTBE was not used in spite of the problem—it was used in ignorance of the problem due to lack of research. “The major problem,” he continued, “is that we are still uncertain about the health effects. We need to know more about anything that goes into gasoline. Anytime you put something in gasoline you are guaranteeing maximum exposure of the U.S. population and that requires special consideration of the exposure assessment and of the health risk.”



Bernard Goldstein

Should SRA Risk Taking Positions? Follow-Up

Gail Charnley, SRA Past President

In the last issue of the *RISK newsletter*, I recounted the views expressed during a roundtable at the 1999 Annual Meeting regarding whether the Society for Risk Analysis (SRA) should take positions on risk-related policy issues. I also proposed a straw-man statement on the value of risk analysis as it relates to the precautionary principle and asked for readers' feedback. Needless to say, the responses I received covered the spectrum of possible views. Many thanks to those who took the time to respond.

Summary of Your Comments

1. *SRA should take positions because if we don't, others with less of a stake in risk issues will.*

SRA should consistently support rational analysis of risk against all comers. We represent a developing science and ought not to be apologizing for it.

Not taking a position is also a position. Silence gives assent to the various misuses of risk assessment being promoted by various parties.

SRA should not abrogate our responsibility to our respective disciplines because we have not yet elevated our art to a pure science dictated by fundamental laws. Instead, we have to search for those laws and truths and we have to be honest in letting detractors know that perfection has not been attained.

2. *SRA should defend the practice of risk analysis but should not go so far as to take positions on the acceptability of a risk.*

SRA should take public positions only on risk-related issues pertaining to scientific or methodological aspects of health risk assessment; SRA should be neutral on matters of public policy that involve balancing of competing values, lest the diversity of political opinion among SRA members detract from the central SRA purpose: to inform and improve the practice and applications of risk analysis.

SRA should take very strong positions when it comes to assessing, identifying, and quantifying risks; that is SRA's business. We should avoid value judgments and limit ourselves to clarifying what risk management decision options are and what the costs, benefits, and risks are of each option.

SRA should make statements based only on scientific truth or on such values as its membership has agreed to and ratified. SRA bylaws should be modified to permit the formation of a consensus on shared values.

3. *There is nowhere better than SRA to express and clarify the diversity among meaningfully different arguments regarding political issues.*

Clarification of different lines of reasoning can only be a wanted contribution to public decision making.

4. *It is inadvisable for SRA to make policy statements.*

Making statements will be divisive and dependent on who is in power at the time.

Taking positions is too slippery a slope. There are no areas where SRA should make a public statement.

Statement on the Roles of Risk and Precaution

Most commenters liked the proposed statement on the value of risk analysis and many had good suggestions for rewording and clarifying it.

The accompanying box (on page 5) shows a revised statement that reflects many of those suggestions. Most commenters stated that this statement is a good example of the type of position SRA can take because it is neither advocating nor condemning; it is stating and explaining some of the fundamental principles of sound science and reason.

Other commenters were appalled by the statement because SRA would be acknowledging anti-intellectuals as representing a "complementary" discipline, much as faith healers and homeopaths call themselves practitioners of alternative medicine "complementary" to orthodox medicine. Those commenters believe that the statement would cause Galileo to turn over in his grave and the citizens of colonial Salem to smile.

But for the most part, those who responded thought that with some rewording, the statement would be an appropriate reflection of the juxtaposition of risk analysis and precaution and voted in favor of SRA endorsing it.

Procedures for Making Statements

Only a few commenters opined on the process by which SRA might make statements. One thought that a lengthy process involving member surveys and analysis would prevent timely responses and thought responsibility should be delegated to the SRA Council.

Another thought that the SRA Council should recommend how and when to develop statements but the membership should be able to review and vote on proposed statements before they are adopted.

One thought that a simple majority would suffice and another thought 80% approval should be required.

Presumably the other commenters thought that the process involving *newsletter* publication and a comment period is adequate.

I propose that the SRA Council take responsibility for developing statements (either at the suggestion of Council members or in response to SRA members' suggestions) and that we take advantage of the Internet to circulate draft statements to the membership by e-mail for comment and voting.

The SRA Council will discuss this and other possibilities at its June meeting. Please e-mail me at healthrisk@aol.com with any further comments on procedure.

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

(see story on page 4)

The Society for Risk Analysis believes that both risk assessment and precaution are essential components of how decisions are made about the best ways to minimize threats to our health and our environment. Risk assessment uses science to characterize the nature and likelihood of those threats. Many kinds of information, including information from science and risk assessment, are used to decide which threats we should worry about and to determine how best to minimize them. When decisions are made about reducing, eliminating, and avoiding threats, precaution is exercised when the exact relationship between a threat and its impact on health or the environment is unclear. Exercising precaution means three things: (1) using all the best scientific information we have to characterize risks, (2) not waiting for complete scientific information before deciding to act to minimize a potentially serious risk, and (3) making sure that minimizing that risk does not increase other types of risks to health or the environment.



Regulatory Risk Review

Avoiding Chaos

David P. Clarke

In a November 1999 speech titled "Using Science to Avoid Chaos in Food Safety," the Administrator of the U.S. Food and Safety Inspection Service, Thomas J. Billy, observed that "the concept of risk analysis is not limited to the food safety arena, by any means—the structure is universal." Would that everyone recognized the centrality of risk analysis in virtually every aspect of our lives. Unfortunately, efforts to discount "the Risk Paradigm" and the "linear science" upon which it rests continue, even as this same science continues along a path of ceaselessly astonishing invention and discovery.

In a new book, *Pandora's Poison* (MIT Press), author Joe Thornton describes the current risk assessment framework that uses scientific and engineering tools—including toxicology and epidemiology and assorted pollution-control devices—as having "failed resoundingly." According to Thornton, the Risk Paradigm and its focus on individual pollutants has allowed "a witch's brew of toxic, persistent pollutants" to "blanket the entire planet." Later, however, the author writes that "absolutely no information is available on trends in the vast majority of chlorinated pollutants, and we have no data on changes in the total organochlorine burden in the environment." Faulting the Risk Paradigm for its focus on "only local and immediate exposures through one or a few exposure routes," the author calls for a new Ecological Paradigm that would preclude society's access to whole classes of technologies, such as chlor-alkalal chemistry, genetically modified foods, and the like, because risk assessment and its related sciences "can never completely predict or diagnose the impacts of individual chemicals on natural systems." Presumably, however, it is this very science that Thornton is relying on when he writes that "a growing body of evidence suggests that global toxic pollution is already contributing to a slow, worldwide erosion of the health of humans and other species." Under the Risk Paradigm, it would appear, our knowledge runs the gamut

from near zero to enough that we can declare a worldwide crisis, even as the average life span in the United States has almost doubled since the turn of the century.

Thornton concludes his lengthy argument against organochlorines and the current risk assessment process by emphasizing the view that science is never "purely objective" but includes, besides its empirical content, "the marks of the interests, social positions, cultural context, and political environment of the people who created it." Undeniably, government and industry use science for their various purposes; it is not an activity wholly detached from practical governmental and business goals. But to deny that truth-seeking research by Darwin, Dalton, Mendel, Crick and Watson, Einstein, and many others have improved knowledge in an objective way is to miss the essence of scientific knowledge.

Would that everyone recognized the centrality of risk analysis in virtually every aspect of our lives.

In contrast to Thornton's antirisk-assessment view, the European Commission in a "communication" on the precautionary principle places risk assessment foursquare at the center of decision making. Balancing various political and other factors in arriving at "transparent and coherent decisions," notes the 2 February communi-

cation, "requires a structured decision making process with detailed scientific and other objective information." Such a structure is provided by the assessment, management, and communication of risk.

Perhaps at the political level two basic paradigms are operating today—one that says we're wastefully expending significant resources in many instances to reduce the "last 10%" of pollution and the opposite one that says we're "going to hell in a handbasket" and can't do enough to avert impending doom. Risk assessment—because it involves such cross-fertilization of knowledge and because it continues to improve with better data and analytical methodologies—can help us locate the truth in each of those viewpoints. Otherwise, we could face the chaos against which Thomas J. Billy warns. ◇◇



In My Opinion

Looking Beyond the LNT Debate

Steve Brown

Every few months, the RISKANAL list server¹ renews the debate regarding the scientific merits of the “linear no-threshold hypothesis” (LNTH) for carcinogenesis. Lest anyone forget, the LNTH is frequently used to predict cancer risks for exposures² to carcinogens that are substantially lower than the exposures experienced by the epidemiologic cohort or group of laboratory animals on which the finding of carcinogenicity was based. It holds that the lifetime risk of cancer is proportional to the lifetime exposure to the carcinogen in question, at least below some “point of departure” that is within the range of the exposures in the studied humans or animals. It is a “model” for predicting cancer risk under conditions where observations are infeasible.

The debate usually becomes polarized between the position that the LNTH is plausible, health-protective, and not contradicted by available data, and the position that the LNTH is implausible, unnecessarily conservative, and contradicted by available data. I will attempt to show in this commentary that, although many of the arguments on both sides of this debate are credible, the debate itself is misguided and unproductive, more in the realm of ideology than science.

Consider the following analogy from physics. Newtonian physics described the attractive force between two massive bodies as proportional to the masses of each and inversely proportional to the square of the distance between them (actually, between their centers of gravity):

$$F = GmM/r^2 \quad (1)$$

M and m are the masses of the larger and smaller body, respectively. For a small body in the vicinity of the earth’s surface, r is effectively constant and equal to the radius of the earth, and M is the mass of the earth, so equation (1) can be simplified to:

$$F = gm \quad (2)$$

The constant g is the acceleration due to gravity near the earth’s surface. It can be used to estimate the energy with which the smaller body would strike the earth if released from a height h and allowed to fall freely:

$$E = gmh \quad (3)$$

Equation 3 is a model that predicts the energy of impact as a function of the mass of the smaller body. It is an LNT model; E is analogous to lifetime risk and m is analogous to lifetime exposure. The constant of proportionality, g, can be easily established by releasing relatively dense and massive objects from various heights and measuring the energy of impact, for example, by observing the temperature rise in a thermally isolated clay bed on which the object impacts.

No physicist would question the validity of the gravitational model in Equation (3) as m becomes small *under ideal condi-*

tions. Ideal conditions would include values for h that are small in comparison to the radius of the earth and releasing the object in a vacuum so it will be unaffected by the friction of air.

But no physicist would believe that the model would yield accurate predictions of impact energy for objects of very small

mass: neutrons, electrons, neutrinos, etc. These objects would be influenced much more by the other forces (strong, electromagnetic, weak, etc.) that are known to apply to them. The actual en-

ergy transfer would depend on the nature of the released body and of the impacting surface: whether it is charged or neutral, for example. And of course it would be difficult if not impossible to observe the impact energy of subatomic particles experimentally.

In other words, *it’s complicated*. The same judgment applies to carcinogenesis. It may be perfectly valid to believe that some process of carcinogenesis is linear in exposure at the molecular level. For example, the alteration of single DNA bases seems to me a good candidate for linearity without threshold. Therefore, any stage of carcinogenesis controlled by a single gene should be consistent with the LNTH. If all of the other processes of carcinogenesis for a particular type of cancer are unrelated to the exposure in question, then cancer risk, too, would be described well by the LNTH. But, of course, the pharmacokinetics of a chemical carcinogen may not be linear, so the ratio of the concentration of a carcinogen in the organ of concern to the external exposure rate may not be the same at low and high exposures, and the LNTH applied to that external exposure would not be accurate. Moreover, the carcinogen may affect some other stage of carcinogenesis and lead to nonlinearity in the overall response. For example, it is perfectly plausible to me that radiation may create malignant cells in proportion to exposure, while it also may induce some nonlinear change in the immune system that actually reduces risks at very low doses because it becomes better at identifying and removing those transformed cells. I don’t know that such a “hormetic” effect actually occurs, but I don’t find compelling any of the arguments that it can’t occur.

My point here is that the inability to match observations of risk with the predictions of the LNTH at low exposures may not invalidate it as *part* of the equation. The inability to match impact energy with mass for subatomic particles does not invalidate the law of universal gravitation. Nobel prizes would not be awarded to physicists who sneered at the law of gravitation nor to physicists who claim that impact energies would be predicted perfectly by mass if only we had the observational tools to measure them accurately. The Nobel prizes go to the physicists who discover the strong, electromagnetic, and weak forces and explain why the law of gravitation, while still valid, may be irrelevant to the prediction of impact energies for very small mass. So we risk assessors and the scientists on whom we depend should be trying to understand all the processes that affect carcinogenesis, not decrying the LNTH or defending it.

In other words, *it’s complicated*.

I suspect that most if not all of the people who post to RISKANAL on the LNTH issue are, at heart, aware of the above arguments. I also suspect that the urge to attack or defend the LNTH comes more from ideologic mindset than it does from scientific roots. Defenders of the LNTH generally view government attempts to protect the public from threats to their health favorably, even when expensive and/or unproved. Opponents of the LNTH generally view such attempts as ill-advised government meddling. I don't think the debate will vanish until we have a theory of carcinogenesis, well supported with experimental data, that describes low-exposure risks much better than the LNTH. In the meantime, I recommend (based on my own policy biases):

1. When information is available to demonstrate that the LNTH doesn't work very well for a specific carcinogen, abandon it as a default in favor of a model (empirical if necessary) that better fits the available information. Note that such a model may have an LNTH tail, with a slope different from that the linearized multistage model would predict. The standard of evidence for abandoning the LNTH shouldn't be onerous, but hand waving is not enough. I believe the proposed Environmental Protection Agency (EPA) guidelines for carcinogen risk assessment will allow such non-LNTH models, but I fear that EPA will not be courageous in applying them.
2. Handle uncertainties about model applicability as quantitatively as possible. Admitting that the selected model—LNTH or other—is not necessarily accurate at low levels of exposure should help depolarize the debate. Develop explicit statements about how uncertainty will be handled, such as the weights assigned to false positives (overestimating the risk) versus false negatives (underestimating the risk).
3. Avoid inclusion of policy decisions in the risk assessment process. Put the onus for being conservative (regulating

risks that may not be as high as the model predictions) on the decision maker, not on the risk assessor. In return for this relief, risk assessors should stop criticizing decision makers for poor science and focus their ire on the policy issues.

4. Report individual lifetime risks calculated to be less than 10^{-4} (one in ten thousand, 100 in a million) as $<10^{-4}$. Risk estimates in that range are unlikely to be validated or invalidated by any currently available observational means, even in the unlikely event that millions of people experience the exposure level used in the assessment.³ Lower estimated risks may be used in cost/risk/benefit calculations to assess population risk, but appropriate disclaimers should be included. If a decision to regulate is taken below the 10^{-4} boundary, make it clear that it was based on policy regarding uncertainty, not on scientific confidence in the risk estimates.

¹ RISKANAL is an Internet-based electronic forum partially sponsored by SRA but devotedly tended by James S. Dukelow of Pacific Northwest National Laboratory, to whom we owe a great debt of gratitude. If you are not already a subscriber, visit the SRA Web site at <http://www.sra.org> and search for RISKANAL to get instructions for signing up.

² I use "exposure" rather than "dose" so that I can include carcinogens such as radon whose exposure metric is not strictly "dose." Note that what the chemical community calls "dose" would be called "dose rate" by the radiation community.

³ If a demographically stable population of a million people all actually incurred a 10^{-4} lifetime risk, the expected number of excess cancers in the population would be about 1.4 per year, on average. The baseline cancer rate would be in the vicinity of 4,000 per year. ◇◇



Journal Notes

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

Risk Analysis is beginning the new year with a refreshing subscription drive designed by our new publisher, Blackwell. Through the use of advertising materials, booths at professional conferences, and direct contact with academic libraries, Blackwell has begun an international campaign to increase the visibility of both the Society for Risk Analysis (SRA) and the Journal. The editorial staff, the Publications Committee, and the Secretariat have been polled for support. A Journal booth is planned for the following professional meetings: SRA, Society of Toxicology and Society of Environmental Toxicology and Chemistry. Your ideas for increasing the readership and visibility of the Journal are invited.

The editorial staff has agreed to use electronic transfer, to the extent possible, for all manuscript communications. Our goal is to reduce the time from submission to publication as much as possible. The Journal will begin accepting electronic submissions immediately. New instructions for this procedure appeared on the inside back cover of the April issue.

Again this quarter, our editorial staff welcomes a new mem-

ber, Jeryl Mumpower of University of Albany, State University of New York, who has assumed the position of Area Editor for Social and Decision Sciences. Jeryl replaces Detlof von Winterfeldt who officially completed his tenure on 31 December 1999, although he will continue to edit a substantial backlog of papers which were previously submitted. It has been a pleasure to work with Detlof over the past year since I became Editor in Chief. I am certain that all of you join me in thanking him for his enormous contributions as Area Editor for Social and Decision Sciences.

The next two issues, April and June 2000, have been planned. Upcoming in the Journal will be a perspectives article authored by Ragnar Löfstedt, Saburo Ikeda, and Kimberly Thompson on "Risk Management Across the Globe: Insights from a Comparative Look at Sweden, Japan, and the United States." In addition, there will be a special collection of papers and a number of book reviews including a review of the "IARC Monograph: Quantitative Estimation and Prediction of Human Cancer Risk."

As always, we welcome your comments and suggestions for books and topics that should be included in reviews or perspectives articles. I can be reached at elanderson@sciences.com. ◇◇



Chapter News

East Tennessee Chapter

Maria Socolof, Secretary

The East Tennessee Society for Risk Analysis met 24 February to confirm new officers and to hear a presentation by Dr. Owen Hoffman on the National Cancer Institute's (NCI) "Assessment of Doses to the Thyroid Gland Throughout the Continental U.S. From Weapons Testing in Nevada During the 1950s."

Hoffman demonstrated NCI's methods for calculating an individual's dose as a result of location, diet, and age at time of testing. He summarized the overall impact as being between 8,000 and 210,000 excess cases of diagnosable thyroid cancer, additional undiagnosed occult thyroid cancers, benign thyroid nodules subject to surgical removal, and, for those with the highest levels of exposure, the risk of autoimmune hypothyroidism. Additional exposures would have come from medical x rays and the use of ¹³¹I in medical diagnostics, global fallout from weapons tests in the Pacific and former USSR, and government facilities of Hanford, Oak Ridge, Savannah River, and Idaho Falls. The NCI Web sites are <http://rex.nci.nih.gov> or <http://ww2.nci.nih.gov/fallout/html>.

Officers for the year 2000 include President Owen Hoffman (SENES Oak Ridge), Vice President Barbara Vogt Sorensen (Oak Ridge National Laboratory), Treasurer Po-Yung Lu (Oak Ridge National Laboratory), and Secretary Maria Socolof (University of Tennessee).

Plans for the next year's activities are currently being discussed.

Chapitre Saint-Laurent

Sylvain Loranger, President

Current Activities

During fall 1999 and winter 2000, lectures have been organized jointly by the Chapitre Saint-Laurent (SETAC/SRA Chapter) with the Biotechnology Research Institute (National Research Council Canada), the TOXEN (University of Québec at Montréal), and the Québec Center of Expertise in Environmental Analysis (Québec Department of Environment). The lectures were scheduled every month or so and alternated between Montréal and Québec city.

So far six seminars have been held: (1) 13 October—"Quality Control in Aquatic Toxicology: Application and Relevance" by Mr. Christian Bastien, Québec Center of Expertise in Environmental Analysis, (2) 11 November—"Rehabilitation of Gasworks Contaminated Soil" by Mr. Langis Simard, Hydro-Québec, (3) 8 December—"Does Pollution Impact on Fish Health?" by Mme. Catherine Couillard, Maurice Lamontagne Institute, (4) 27 January—"Harmonization on Workplace Chemical Substances at the International Level: A Fallout of World-Scale Exchanges" by Mr. Marc Baril, Occupational Health and Safety Research Institute, (5) 9 February—"Ecotoxicological Screening: an Integrated Control Tool of the Montréal Urban Community" by Mr. José Lopez Gastey, Urban Community of Montréal, and (6) 8 March—"The Development of Retinoic Acid-Based Biomarkers in Wildlife

Toxicology" by Mr. Philip Spear, University of Québec at Montréal.

Upcoming Activities

The Chapitre Saint-Laurent is actively preparing its two-day annual symposium under the chairmanship of Dr. Peter Campbell (INRS-Eau, Québec) which will be held on 8-9 June 2000 in Sainte-Foy (near Québec city). The theme is "Environmental Quality: Concepts and Tools." Four different fields are open for presentations: general concepts, contemporary issues and challenges, tools and applications, and integrative approaches.

The opening of the symposium will be a plenary session welcoming two guest speakers: Dr. Eric De Wailly, Québec Environmental Health Committee, and Dr. Émilien Pelletier, Rimouski Sea Sciences Institute. Then there will be two simultaneous platform sessions on the above-mentioned fields. Also, a specific period has been reserved for a poster session to facilitate the exchange of ideas and views.

The symposium will also be the occasion for the chapter to hold its annual general meeting.

Information

For more information about the Chapitre Saint-Laurent, its activities, and the annual symposium, please visit our Web site at www.ebisoft.com/saint-laurent.

Southern California Chapter

Larry Gratt, President

The Southern California Chapter of the Society for Risk Analysis (SCSRA) Annual Workshop, "Risk Assessment and Risk Management in the 21st Century," will be held 18 May 2000 at the Tom Bradley International Hall on the University of California-Los Angeles (UCLA) campus. The all-day meeting will be comprised of three key sessions: "Diesel Exhaust/Air Toxics," "Accidental Risk/RMPs," and "Aerospace/Human Health Risk." This meeting should provide up-to-date information in several risk disciplines.

Speakers committed to date include John R. Froines, Ph.D., the Chairman of California's Scientific Review Panel and Professor of Environmental Health Sciences in the School of Public Health at UCLA and Director of the UCLA Center for Occupational and Environmental Health; Steve Faichney, Senior Risk Analyst-Community Relations, Ultramar Refinery in Wilmington, California; Melanie Marty, Ph.D., Chief of the Air Risk Assessment Unit in the Office of Environmental Health Hazard Assessment; and Paul Beswick, Risk Management Program Manager at the California Metropolitan Water District.

The registration fee includes lunch and a copy of the proceedings and is \$75 for members, \$85 for nonmembers, and \$35 for students. Contact SCSRA President Larry Gratt to register (phone: 858-456-0000, fax: 858-456-0008, e-mail: Lgratt@aol.com).

For information concerning membership in the Southern California Chapter contact President Gratt, President-elect Jim Hudson (310-530-1008, Hudson@actainc.com), or Secretary Don Greenlee (818-508-7746, biotox@nwc.net).

National Capitol Area Chapter

Christine Chaisson, Chair

The Society for Risk Analysis (SRA) National Capitol Area Chapter is again active. The mission and operating format of the chapter has been reconsidered to draw on the strengths of the area membership opportunities while avoiding some of the problems that contributed to its decline in the past. The Chapter news can be viewed on its Web site: www.gis.american.edu/sra.

On 4 May, the first meeting of the SRA National Capitol Area Chapter was held at the University of Maryland, hosted by the Joint Institute for Food Safety and Applied Nutrition. The guest speaker was Dr. Fritz Kaferstein, visiting scholar at the Food and Drug Administration and former head of the World Health Organization food safety program. Kaferstein shared his "lessons learned" in the approach and practicalities of defining and assessing risk from the perspectives of different countries, with food safety as the example.

The Chapter is comprised of several subcommittees focused on interest areas. These will meet separately in addition to the joint Chapter meetings. Geography of the membership will also be considered in these plans. New members are welcome—students to senior practitioners! Contact Dr. Chris Chaisson (703-978-6496, ChaissonInc@erols.com) or one of the Subcommittee Leaders listed on the Web site.

Northern California Chapter

Ronald Block, Secretary

The Northern California Chapter of the Society for Risk Analysis (NCCSRA) is having an excellent year. Chapter membership is up at least 25% thanks to national collecting year 2000 dues. New officers are President Melanie Marty (California Environmental Protection Agency [Cal/EPA] Office of Environmental Health Hazard Assessment [OEHHA]), President-elect Elizabeth Miesner (Environ), Secretary Ronald Block, (Block Environmental Services), Treasurer Robert Howd (Cal/EPA OEHHA), and Councilors Ravi Arulanantham, (Cal/EPA Regional Water Quality Control Board), Gregory Brorby (Geomatrix), and Bill Kastenber (University of California, Berkeley). At the first meeting of the year on 27 April 2000, a workshop was held concerning "Toxic Issues in Land Use Planning." Speakers presented various insights on the subject including legal, public, developers, and regulatory perspectives. The Chapter published its first newsletter which was widely received by the membership. The purpose of the newsletter is to inform the membership of local "risk happenings" in the Chapter area. Other SRA members may view our newsletter on the Chapter Web site (www.sra.org/ncc/). We again thank Steve Brown for being our Webmaster. Our next newsletter, although late, will be published soon.

New England Chapter

Jo Anne Shatkin, President

The Society for Risk Analysis New England Chapter (SRA-NE) and Boston Risk Assessment Group has been holding monthly seminars at Massachusetts Institute of Technology with two invited speakers. This year each seminar included one presentation by a local expert and one from an invited guest from another geographic area.

On 12 January, Judy Pederson and Leo Sommaripa, MIT Sea Grant Program, discussed their work on "Examining the Risks Associated With Capping/Not Capping Contaminated Sediments" and Professor Roger Cooke, Department of Mathematics, Delft University of Technology, discussed his "Scuffles With the National Radiological Protection Board."

On 9 February SRA-NE held a joint meeting with the Licensed Site Professional Association at the Westin Hotel in Waltham. The panel discussion led by Jerome Cura, Menzie-Cura & Associates, Inc., on sediment screening levels was so well attended that only about half of the participants were able to sit and many listened from the hallway. Panelists included Rick Sugatt, Massachusetts Department of Environmental Protection Office of Research and Standards, Ken Finkelstein, National Oceanographic and Atmospheric Administration, and Patty Tyler, U.S. Environmental Protection Agency, Region I.

On 8 March, William R. Corcoran of Nuclear Safety Review Concepts Corporation presented "Recent Experiences in the Back End of the Risk Management Cycle" and Anika Makri and Dale Hattis, Ph.D., of the George Perkins Marsh Institute, Clark University, discussed "Birth Weight as a Predictor of Toxicant-Induced Changes in Infant Mortality-Test With the Effects of Smoking."

On 11 April, Joseph Graziano of Columbia University discussed "The Bioavailability of Soil Lead in Humans by Stable Isotope Dilution" and Abel Russ of Clark University presented "Interindividual Variability in Exposure to Particulate Air Pollution and an Exploration of Associated Chronic Mortality Outcomes."

On 10 May, Durland Fish of Yale University presented "Public Health Threat of Emerging Vector-Borne Diseases: A Lesson From West Nile Virus" and Ruddle Clarkson, Montgomery Watson, discussed "Perspectives on Risk Assessment at River Valley School in Marion, Ohio."

The concluding seminar for the season on 14 June includes a panel presentation of risk researchers from Cornell University discussing a variety of topics. Meetings are free, begin generally at 4:15 p.m., and are open to the public.

Please contact Jo Anne Shatkin, Menzie-Cura & Associates, Inc., (978-322-2820, jashat@menziecura.com) for Chapter information.

Chapter newsletter items should be sent to Marilyn Lourandos (mlou19@idt.net). ◇◇



RISK Assessments

Letters From Our Readers

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, 115 Westwood Dr., Mankato, MN 56001; e-mail: mwalchuk@mctcnet.net; fax: 507-625-1792). Letters may be edited for clarity, grammar, spelling, and length. ◇◇

"The Future of Risk Analysis in the 21st Century"



Society for Risk Analysis 1999 Annual Meeting Atlanta, Georgia 5-8 December



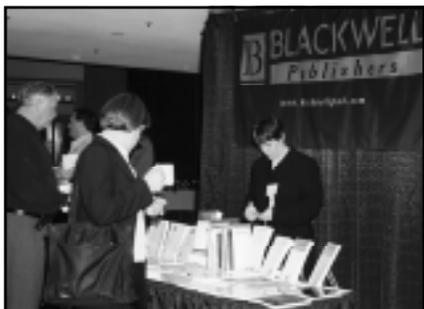
Hussni O. Mohammed (left) and Sanna Moez



Welcome Reception



Left to right: Khoan Dinh, Arvind Susarla, Guogi Han, and Dan Hardy



Alison Denby of Blackwell Publishers, the new publisher for *Risk Analysis*



At the new member breakfast (left to right): Jack Kooyoomjian, Theresa Garvin, Garrick Louis, Brenda Boutin, and Carolyn Smallwood



Distinguished Achievement Award winner Bernard Goldstein (center) with Camilla Warren and Charles Powers



**President's Reception
The Abbey**



Naum Borodyanskiy of the Kiev SRA Chapter

Poster Session





Specialty Groups

Ecological Risk Assessment Specialty Group

Bruce Hope, Chair

The Society's Ecological Risk Assessment Specialty Group (ERASG) is presently planning a number of activities for the Society for Risk Analysis (SRA) Annual Meeting in Washington, D.C., 3-6 December 2000. We hope to sponsor two workshops, three symposia, at least seven platform sessions, and one poster session, all devoted to ecological risk assessment-related topics.

A half-day workshop, "Introduction to Ecological Risk Management," is proposed to provide an overview of the key components of the ecological risk assessment (ERA) process and a review of current national (U.S. Environmental Protection Agency [EPA]) and international (Canada, Europe) guidelines for ERAs.

A full-day workshop, "Performing an Ecological Risk Assessment," will cover methods for conducting ecological risk assessments in the context of EPA's risk assessment paradigm, with emphasis on practical, step-by-step, cost-effective approaches to the process.

Three symposia, "Morals, Values, and Risk Assessment" (working title) (Jessica Glicken, organizer), "Overview of Ecological Soil Screening Levels" (Randy Wentsel, organizer), and "Invertebrates in Ecological Risk Assessment" (Randy Ryti, organizer) are proposed to address timely issues in the practice of ERA.

Seven platform sessions are currently proposed: "ERA for Physical Stressors" (session chair: Clifford Duke), "Probabilistic ERAs" (Bob Fares), "Population-Level ERAs" (David Glaser), "Ecological Risks and Global Climate Change" (Cattriona Rogers), "Ecological Risks from Exotic Invasive Species" (Richard Orr), "ERA Case Studies" (Kristin Lawrence and Taku Fuji), and "Using ERAs in Decision Making" (Charlie Menzie).

A poster session will be available to accommodate additional ERA-oriented abstracts. There will also be an ERASG business meeting, followed by a Section mixer.

Those who would like to join the Group and become more involved in our plans for Washington, D.C., 2000 are encouraged to contact Bruce Hope by phone (503-229-6251) or e-mail (hope.bruce@deq.state.or.us).

Risk Science & Law Specialty Group

Wendy Wagner, Chair

The new officers for the Risk Science & Law Specialty Group are Chair Wendy Wagner, Membership Vice-Chair John Applegate, Internet Vice-Chair Robin D. Smith, International Vice-Chair Michael Rogers, Secretary-Treasurer Ginny Sublet, and Executive Committee members Russellyn Carruth, James K. Hammitt, Wayne Roth-Nelson, Vern R. Walker, and Jonathan Wiener.

The group convened via conference call in March to discuss plans for the year 2000. In addition to sponsoring several panels and a poster session at the December Annual Meeting, plans

for a larger workshop (which will probably not take place until 2001) were also discussed. In order to get a better sense of the types of topics and activities that Specialty Group members might want, Internet Vice-Chair Smith is putting together a survey to solicit ideas from members. Plans are also underway to expand the Group's Web site.

If you would like to participate in any of these activities or have ideas for other projects for the Specialty Group, please contact Wendy Wagner at 440-892-3433 or wagner9@attglobal.net.

Risk Communication Specialty Group

Ann Bostrom, Cochair/Chair-elect

The Risk Communication Specialty Group (RCSG) congratulates the RCSG student competition winner from the 1999 Society for Risk Analysis (SRA) Annual Meeting, Joseph Arvai. Arvai, of the EcoRisk Research Unit of the Institute for Resources and Environment at the University of British Columbia, won the award for his paper "Adapting a Value-Focused Risk Communication Strategy to Decision Making." Support for the prize/competition is provided by ExxonMobil (arranged by SRA member Steve Lewis).

Dose-Response Specialty Group

Peg Coleman, President

The Society for Risk Analysis (SRA) Dose-Response Specialty Group (DRSG) has three major purposes: (1) facilitation of exchange of ideas and knowledge relating to dose-response relationships, (2) encouragement of collaborative research on dose-response modeling, and (3) providing active leadership to advance the science of dose-response assessment. My first three months serving as President of the DRSG have offered exciting opportunities for interactions amongst the multitasking membership of SRA. One of these opportunities arises on the first Tuesday of each month from 3:30-4:30 p.m. at the DRSG teleconference call. In our first call of 2000, some history of the DRSG was described. The most recent Past President, Elizabeth Reese, left DRSG a legacy of Open Forums, intense discussions of specific topics proposed and presented by our members at three monthly conference calls a year. The legacy from the previous Past President, Resha Putzrath, is the Student Award Program, a competition for graduate student presenters that includes monetary support for travel to the national SRA meeting and recognition of their contributions to the field as excellent young investigators and risk practitioners.

The legacy that I want to develop for DRSG in the year 2000 is very much consistent with the purpose of the DRSG. As a microbial risk assessor and food safety regulator, my interest is to encourage dialogue and collaboration amongst DRSG members, and SRA in general, regarding crosscutting issues in dose-response modeling for chemical, physical, and microbial hazards. My sense is that the pitfalls that chemical risk assessors struggled with, or are still emerging from, can be deep sources of wisdom to guide microbial risk assessors in the evo-

lution of thought and methodology for modeling dose-response relationships for foodborne pathogens. Strengthening the presently weak link between risk assessment and risk management in the food safety arena of the United States and more globally is a high priority for me. More plausible dose-response modeling seems crucial to me as microbial risk analysis continues to evolve.

Open Forum

DRSG members were privileged at the March Open Forum to hear Mike Dourson of Toxicology Excellence for Risk Assessment present material from a cooperative project with the Environmental Protection Agency (EPA) (Cooperative Agreement CX82499-01-0).

The project goal was to develop a comparative risk framework for depicting competing risks and benefits associated with consumption of potentially contaminated fish (extensive report available at <http://www.tera.org/pubs/cdrpage.htm>). The EPA is considering methods to compare the possible health risks of consuming contaminated fish and the potential loss of health benefits by restricting fish consumption. The output of the work is intended to provide guidance for policy makers regarding levels of contaminants that would trigger fish advisories. Thus, the framework is intended to assist policy makers in developing clear and simple risk communication messages for consumers of fish from potentially contaminated waters. This work was presented at the SRA national meeting in December, but Mike and his colleagues were eager for more specific feedback to assist the team in critiquing and revising their approach.

The DRSG Open Forum callers certainly met Mike's wish for specific feedback. Some of the most helpful comments offered by Mike's colleagues in the DRSG include the following: The calculation of a Fish Consumption Index (FCI) was questioned as a true measure of relative risk or absolute risk. More plausible procedures may be needed to combine risks and benefits rather than the additive algorithm developed. The severity scales may be better represented on log scale than integer scale. The approach may be excessively conservative and overestimate risk. The influence of assumptions should be explored, including assumptions of linearity. Incorporation of age dependencies and longitudinal studies could be useful in describing the underlying nature of the effects. A suggestion to plot response surface of fish consumption, concentration of chemical contaminants, and an estimated FCI was offered for consideration.

The next Open Forum, scheduled for 6 June, will feature collaborative work on dose-response modeling for the enteric pathogen *Escherichia coli* O157:H7 by a team of scientists from the U.S. Department of Agriculture Food Safety and Inspection Service and the Food and Drug Administration (FDA). Although O157:H7 has not been administered in human clinical trials, human data are available for related bacterial pathogens.

Dr. Mark Walderhaug of FDA will present a novel bounding approach that deals with model uncertainty and a new term, "analogical" uncertainty (how good an analogy is each of the two surrogates to the true dose-response relationship for O157:H7). A creative method for validation will also be presented. Materials will be available for preview by mid-May. Please join in the Open Forum debates, or offer your comments on the presentation by e-mail (peg.coleman@usda.gov).

News from the DRSG VPs

Paul Schlosser, DRSG Vice President for Program Planning (schlosser@ciit.org), sees his role as facilitator, as well as a leader and President-elect for the DRSG. His interests include various means to solicit and develop the ideas for activities



Paul Schlosser

that arise from the DRSG members. A special interest for Paul is a symposium on dose-response modeling as it pertains to the Food Quality Protection Act. Another possibility is a symposium on model validation. But he is eager to hear your ideas for symposia or short courses for the SRA Annual Meeting or for workshops that might take place on the Sunday before the meeting or during the year. If you would like to contribute to or suggest speakers for either of the symposia mentioned above, or for others of your own interest in the area of dose-response modeling, send e-mail to him (schlosser@ciit.org).

Paul would also like to advance the technological capacity of DRSG by building two list serves, e-mail lists to manage our communications. The first list serve would target the DRSG membership in particular, communicating information about monthly teleconference calls and other activities. The second list serve would invite any individuals working or interested in the area of mechanistic or biologically based mathematical modeling to subscribe. This list will extend beyond DRSG, and SRA, and include members from multiple professional societies and specialty groups. Both lists would serve as efficient means of communication, for posting inquiries and announcements, and engaging in dialogue with a unique group of peers. If you are interested in subscribing to these lists, irrespective of membership in the DRSG, send Paul an e-mail (address above) with "DRSG List" or "BB Modeling List" as the subject.

In addition, Paul has also been recently elected councilor for the newly formed Biological Modeling Specialty Section of the Society of Toxicology (SOT). He is ready and willing to serve as a liaison between that group and the DRSG.

Lynne Haber, the Vice President for Education (haber@tera.org), is responsible for organizing the student award program. A detailed description of the student award program was included in the First Quarter 2000 RISK newsletter. An announcement was distributed to DRSG members and at the SOT annual meeting. If you need more information, the announcement is posted on the SRA Web site (<http://www.sra.org>).

Membership

New members are welcome. Although DRSG does request an additional annual dues fee of \$15, feel free to check us out as a guest on a conference call on first Tuesdays from 3:30-4:30 p.m. at 202-260-7280, access code 0577#. This monthly conference call is made possible through the support of the Environmental Protection Agency.

Contact Info

For additional information about DRSG activities, please contact President Peg Coleman (peg.coleman@usda.gov, 202-501-7379, fax: 202-501-6982). ◇◇



Committees

Conferences and Workshops Committee

Steve Lewis, Chair

First, some truly great news. Last December's Continuing Education courses were well-subscribed, favorably evaluated, and profitable. Thanks to the many who were involved. Nevertheless, the five courses that were offered represent the smallest number of course options in recent memory. We apologize to anyone who could not be accommodated . . . and a special apology to those who had registered for the course that was cancelled (due to illness on the part of the instructor).

For this year's Society for Risk Analysis (SRA) Annual Meeting, our desire is to improve and expand the Continuing Education (CE) program offerings. Please consider this an open invitation to suggest topics for CE, especially those topics for which you're willing to lead and/or teach. It's a great opportunity for you to share your special skills and knowledge with others, add to the appeal of the Annual Meeting, and contribute to the Society at large. Anyone who is interested in submitting a proposal for a CE course should request guidance materials from the Society Secretariat (preferably by e-mail to Brett Burk at BBurk@Burkinc.com).

The Committee cosponsored (and partially funded) a workshop—held just before the December 1999 Annual Meeting—on approaches to harmonizing risk assessment methods for cancer and noncancer. The workshop was a tremendous success . . . where success was defined as “the participants found much more to agree on than was expected.” A consensus report is being prepared by the workshop Steering Committee (which includes several SRA members).

A highly successful workshop on approaches to estimating and dealing with uncertainty in risk assessment was held in February 2000. Enormous thanks are due Scott Ferson who organized the workshop and served as its moderator. Indeed, the program was so successful that the Committee is considering scheduling another offering in the future . . . possibly to be held on the West Coast. Those interested in knowing more about the program or in suggesting timing and/or location(s) should e-mail their interest to Scott (scott@ramas.com).

However, mixed among these successes have been some frustrations. The Committee regrettably had to cancel two separate programs over the past several months. Last September's “off-season” symposium had to be postponed when several of the speakers and likely participants were pulled away by a conflict with late-scheduled meetings by another organization. A second program (on application of Bayesian methods in risk analysis) had to be postponed due to insufficient registration. Nevertheless, I'm happy to report that both programs are being rescheduled.

Regarding the “off-season” symposium . . . although dates are still to be decided, the location will almost certainly be Washington, D.C. Thanks are due to Jim Wilson and Hugh Spitzer who have devised an agenda that is expected to include sessions on:

- Recently enacted and pending legislation regarding environmental health regulatory policy. Topics are likely to

include the Food Quality Protection Act (“extra factor” for protection of children's health), the Safe Drinking Water Act (mandatory screening and testing for “endocrine disruptors”), and the pending “Regulatory Improvement Act” (with a balanced review of its major provisions).

- Significant regulatory policy issues, such as recent or imminent events under the Clean Air Act or pesticide regulations.

If the program content catches your interest, please let Jim (wilson@rff.org) or Hugh (env.network.hsptizer@erols.com) know. Specifically, we are interested in what timing would be most convenient for the majority of those who are interested in attending the conference.

The latter program (that is, the workshop on Bayesian methods) has been rescheduled for 18-20 September in Washington, D.C. Thanks are due to Jim Wilson and Annie Jarabek for organizing the program and to Resources for the Future and the Environmental Protection Agency's National Center for Environmental Assessment who will host the event. More information will be forthcoming. In the meantime, folks may register their interest by e-mail to Jim (wilson@rff.org).

The Committee has committed to cosponsoring two additional programs, one on the topic of integrating socioeconomic analyses with health/environmental risk assessment. The workshop (by invitation only so that an organizational, disciplinary, and international balance can be achieved) was held on 1 and 2 May, and was expected to yield a consensus report as well as a litany of opportunities for collaborative research . . . possibly even a set of general principles for integrating the products of economic and risk analyses. (SRA's Past President, Gail Charnley, cochaired the workshop with Alan Krupnik of Resources for the Future.)

The second cosponsored program is on the role of biomarkers in health risk assessment and is scheduled for 21 and 22 June (in Research Triangle Park, North Carolina). Workshop participants will be asked to contribute to developing a prospective research agenda. For more information on the workshop, contact Steve Lewis (sclewis@erenj.com).

Bob Tardiff (Past President of SRA and member of the Committee) is working on an opportunity for SRA to participate in the International Union of Toxicology program in Australia in the summer (our summer) of 2001. More information can be received from Bob (rgt@thesapphiregroup.com).

The Committee is working on a forum event for aerospace risk including, for example, mission selection, cost overrun and time delay, risk communication, and maintenance scheduling.

Future topics/plans may include programs on “stakeholder participation,” “practical consensus on what constitutes as ‘adverse’ effect,” “ecological risk assessment,” and “expanded role(s) for peer review to assure sound science in regulations.”

All ideas and suggestions are welcome. We are especially interested in learning about your preferences for meeting times (seasons, months, and days of the week), meeting length, and sites/locations.

We are also eager to review proposals for the Sunday workshops held before the SRA Annual Meeting. ◇◇◇



News and Announcements

American Radiation Safety Conference and Exposition

The American Radiation Safety Conference and Exposition, the 45th Annual Meeting of the Health Physics Society, will be held 25-29 June 2000 at the Denver Convention Center in Denver, Colorado. A session of interest in the risk area will be the Wednesday Plenary, "Workshop on Harmonization of Government and Private Sector Roles in Radiation Safety Regulation." The session will feature international speakers, participants from the U.S. agencies, and contributors from state departments. The Wednesday afternoon session will highlight national and international speakers on "Bridging Radiation Policy and Science." The meeting program can be seen at <http://www.hps.org/documents/prelimprogram.pdf>.

American College of Toxicology 21st Annual Meeting

The American College of Toxicology will hold its 21st Annual Meeting 12-15 November 2000 at the Catamaran Resort Hotel in San Diego, California. For more information contact Eve Gamzu Kagan at phone: 301-571-1840, fax: 301-571-1852, or e-mail: ekagan@actox.org.

Society for Risk Analysis 2000 Annual Meeting Applications of Risk Analysis in Industry and Government 3-6 December 2000, Crystal Gateway Marriott, Arlington, Virginia

The Society for Risk Analysis (SRA) 2000 Annual Meeting will be held at the Crystal Gateway Marriott in Arlington, Virginia, only minutes away from the many attractions of the Nation's Capital. With the theme "Applications of Risk Analysis in Industry and Government" the meeting will encompass several types of scientific sessions, covering environmental assessments, safety analyses, and legal and social science contributions, as well as the usual range of topics.

Poster Presentations

Poster sessions will be grouped by subject and presented either in larger groups, with author attendance during meeting breaks, or in smaller groups as poster-platform sessions. The latter include three-minute descriptions by authors at the start of each session, facilitated by a session chair.

Oral Presentations

Oral presentations will be grouped by subject and facilitated by a session chair. Each oral presentation will take 15 minutes, followed by 5 minutes for audience questions and comments. Session chairs will keep speakers within time limits so all presentations can be given during the scheduled time.

Symposia

Symposia address a particular subject of interest through a multidisciplinary format. Generally, symposia follow the same format as the oral presentations.

Workshops

Workshops will take place on 3 December, one day prior to the regular meeting sessions. The half-day (four hours) and full-day (eight hours) workshops are educational in nature.

Exhibits 2000

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

Book Exhibit

The Annual Meeting will once again include a combined book exhibit. Books will be displayed and each attendee will be provided information through our list of publications. The list will include prices, any discounts that may be offered, and ordering information. For more information or book reservation forms, contact Lori Strong at 703-790-1745 or fax: 703-790-2672.

Preliminary Program

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

Questions?

Program Chair: John Ahearne, 919-547-5213, fax: 919-549-0090, e-mail: ahearne@sigmaxi.org
SRA Secretariat: 703-790-1745, fax: 703-790-2672, e-mail: SRA@BurkInc.com



Member News

Judi L. Durda and Damian V. Preziosi

Judi L. Durda and Damian V. Preziosi have joined CPF Associates, Inc., as partners. CPF Associates is a scientific research and consulting organization founded to offer specialized services to the regulated community. CPF's core areas of expertise include strategic environmental management, human and ecological exposure and risk analysis, cost recovery/cost allocation, forensic environmental sciences, natural resource damage assessment, regulatory affairs, and applied chemistry.

Durda is a toxicologist and ecologist with more than 15 years of experience in the health and environmental science fields, working on behalf of both government and private clients. She specializes in the conduct of human and ecological risk assessment to address complex issues related to the manufacture, use, or disposal of chemicals, consumer products, pharmaceuticals, and hazardous and nonhazardous wastes. Her specific experience includes risk assessment and cost allocation evaluation under CERCLA/SARA and RCRA regulatory programs and related litigation, compliance strategy development under CWA and RCRA, source apportionment and risk assessment in technically oriented environmental litigation, and health and safety evaluation of chemicals present in food and consumer products. Durda also has conducted risk and natural resource damage assessments at hundreds of waste sites in the United States and abroad.

Preziosi is an environmental scientist with over seven years of experience in evaluating potential ecological and human health risks associated with exposures to physical, chemical, and biological hazards. His areas of expertise include environmental fate, exposure, toxicology, ecology, and statistics, as well as the assessment and management of risk. He has applied and developed innovative quantitative methods, including population modeling, Geographic Information Systems analysis, and a wide variety of environmental fate, transport, and food-chain models to assist in effective ecological and human health risk assessment and management. In addition,

he has been at the forefront of the emerging application of probabilistic techniques, along with other forms of uncertainty analysis, in ecological risk assessment. His research interests include uncertainty analysis, ecological and population modeling, and remediation technologies.

Dr. William H. Bailey

Exponent, Inc. (NASDAQ: EXPO), is pleased to announce the addition of Dr. William H. Bailey, Principal Scientist, to its New York, New York, office. Bailey joins Exponent's Health Practice.

Bailey specializes in the application of state-of-the-art assessment methods to environmental health and impact issues. His 30 years of training and experience include laboratory and epidemiologic research, health risk assessment, and comprehensive exposure analysis. Bailey is particularly well known for his research on potential health effects of environmental and occupational exposures to electromagnetic fields. He has performed impact assessments for many utility and electrified rail projects. He is a member of a working group that advises a committee of the World Health Organization on risk assessment, perception, and communication.

Bailey is a visiting scientist at the Cornell University Medical College and has lectured at Rutgers University, the University of Texas (San Antonio), and the Harvard School of Public Health. He received an M.B.A. from the University of Chicago. His doctorate degree from The City University of New York and postdoctoral fellowship at The Rockefeller University were awarded in the neurosciences. His B.A. degree was awarded by Dartmouth College. Prior to joining Exponent, Bailey was the President of Bailey Research Associates, Inc., the oldest firm providing strategic advice and scientific consulting on electromagnetic fields and health. Bailey was formerly Head of the Laboratory of Neuropharmacology and Environmental Toxicology at the New York State Institute for Basic Research. ◇◇

SRA Year 2000 International Symposium on Risk and Governance

The Society for Risk Analysis (SRA) is holding a Year 2000 International Symposium on Risk and Governance 21-25 June 2000 at Airlie House in Warrenton, 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.

Further details on the Symposium and the registration form may be obtained at <http://www.sra.org/events.htm#other>.

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 Beth Krieger at the SRA Secretariat (1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101; fax: 703-790-2672; e-mail: bkrieger@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: rae.zimmerman@nyu.edu).



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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*, 115 Westwood Dr., 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.

2000 SRA Officers and Councilors

President: **Roger E. Kasperson**, phone: 508-751-4605, fax: 508-751-4600, e-mail: rkasperson@clarku.edu
President-elect: **John Ahearne**, phone: 919-968-6787, fax: 919-942-5824, e-mail: jfahear@aol.com
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Executive Secretary: **Richard J. Burk, Jr.**, phone: 703-790-1745, fax: 703-790-2672, e-mail: RBurk@BurkInc.com
Councilor, 2000: **Alison C. Cullen**, phone: 206-616-1654, fax: 206-685-9044, e-mail: alison@u.washington.edu
Councilor, 2002: **Michael Greenberg**, phone: 732-932-0387, fax: 732-932-0934, e-mail: mrg@rci.rutgers.edu
Councilor, 2000: **Dale B. Hattis**, phone: 508-751-4603, fax: 503-751-4600, e-mail: dhattis@aol.com
Councilor, 2001: **F. Owen Hoffman**, phone: 423-483-6111, fax: 423-481-0060, e-mail: senesor@senes.com
Councilor, 2001: **Paul Locke**, phone: 202-939-3842, fax: 202-939-3868, e-mail: locke@eli.org
Councilor, 2000: **Dennis J. Paustenbach**, phone: 650-688-1756, fax: 650-326-8072, e-mail: dpaustenbach@exponent.com
Councilor, 2002: **Mitchell Small**, phone: 412-268-8782, fax: 412-268-7813, e-mail: ms35@andrew.cmu.edu
Councilor, 2002: **John Vandenberg**, phone: 919-541-4527, fax: 919-541-1440, e-mail: vandenberg.john@epamail.epa.gov
Councilor, 2001: **Lauren Zeise**, phone: 510-622-3190, fax: 510-622-3211, e-mail: lzeise@berkeley.cahwnet.gov

Section Contacts

SRA-Europe

Joyce Tait, President, phone: 131-6509174, fax: 131-6506399, e-mail: joyce.tait@ed.ac.uk
 Claire Mays, Secretary, phone: +33 1 4740 0990, fax: +33 1 4740 8258, e-mail: claire.mays@wanadoo.fr

SRA-Japan

Saburo Ikeda, phone: (81) 298-53-5380, fax: (81) 298-55-3849, e-mail: srajapan@ecopolis.sk.tsukuba.ac.jp

Chapter Contacts

Chicago Regional: Margaret M. MacDonell, President, phone: 630-252-3243, fax: 630-252-4336, e-mail: macdonell@anl.gov
Columbia-Cascades: Mr. James S. Dukelow, phone: 509-372-4074, fax: 509-372-4094, e-mail: jim.dukelow@pnl.gov
East Tennessee: Maria Socolof, Secretary, phone: 865-974-9526, fax: 865-974-1838, e-mail: socolofml@utk.edu
Greater Pittsburgh: Beth Dutton, phone: 412-395-1400, fax: 412-394-1410, e-mail: beth_dutton@mclaren-hart.com, Melissa Fredrick, phone: 412-269-2007, fax: 412-269-6057, e-mail: mfredrick@mbakercorp.com
Lone Star: Theodora Overfelt, Secretary, phone: 281-600-1000, fax: 281-600-1001, e-mail: toverfelt@ermisw.com; Dr. Arthur F. Eidson, President, phone: 713-996-4416, fax: 713-329-9163, e-mail: feidson@theitgroup.com
Metro (NY-NJ-CT): Rao V. Kolluru, President, phone: 973-746-2029, fax: none, e-mail: raokollur@aol.com
Michigan: (Inactive) John Nelson, phone: 313-845-4588, fax: 313-845-5578, e-mail: Jnelson7@Mail.Ford.com
National Capital Area: Dr. Christine Chaisson, President, phone: 703-978-6496, fax: 703-978-6962, e-mail: ChaissonInc@erols.com
New England: Jo Anne Shatkin, President, phone: 978-322-2820, fax: 978-453-7260, e-mail: jashat@menziecura.com
Northern California: Ron Block, Secretary, phone: 800-682-7255 or 925-682-7200, fax: 925-682-8360, e-mail: rblock@blockenviron.com
Ohio: Glenn Rice, President, phone: 513-569-7813, fax: 513-569-7916, e-mail: rice.glenn@epa.gov
Philadelphia: Eileen Mahoney, Cochair, phone: 212-242-4388, e-mail: eimahoney@sprintmail.com
Puget Sound: Elaine Faustman, phone: 206-685-2269, fax: 206-685-4696, e-mail: faustman@u.washington.edu
Research Triangle: Bob Hetes, President, phone: 919-541-1589, fax: 919-541-0840, e-mail: hetes.bob@epamail.epa.gov
Rocky Mountain: Yvette Lowney, phone: 303-444-7270, fax: 303-444-7528, e-mail: lowneyy@exponent.com
Southern California: Dr. Lawrence B. Gratt, President, phone: 858-456-0000, fax: 858-456-0008, e-mail: lgratt@aol.com
Chapitre Saint-Laurent (Canada): Sylvain Loranger, President, phone: 514-847-1714, fax: 514-845-2073, e-mail: QSAR@qc.aira.com

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Advisory Board: D. Warner North, phone: 650-508-8858, fax: 650-591-2923, e-mail: northworks@mindspring.com

Annual Meeting: John Ahearne, phone: 919-968-6787, fax: 919-942-5824, e-mail: jfahear@aol.com

Awards: Rae Zimmerman, phone: 212-998-7432, fax: 212-995-3890, e-mail: rae.zimmerman@nyu.edu

Chapters and Sections: Jo Anne Shatkin, phone: 978-322-2820, fax: 978-453-7260, e-mail: jashat@menziecura.com

Conferences and Workshops: Steve Lewis, phone: 908-730-1036, fax: 908-730-1197, e-mail: sclewis@erenj.com

Education: Timothy L. McDaniels, phone: 604-822-9288, fax: 604-822-3787, e-mail: timmcd@unixg.ubc.ca

Executive: Roger E. Kasperson, phone: 508-751-4605, fax: 508-751-4600, e-mail: rkasperson@clarku.edu

Finance: Richard B. Belzer, phone: 202-898-2050, fax: 202-478-1626, e-mail: csbindc@iname.com

Gifts and Grants: Dennis Paustenbach, phone: 650-688-1756, fax: 650-326-8072, e-mail: dpaustenbach@exponent.com

Grants Management: John Vandenberg, phone: 919-541-4527, fax: 919-541-1440, e-mail: vandenberg.john@epamail.epa.gov

Membership: Allison Cullen, phone: 206-616-1654, fax: 206-685-9044, e-mail: alison@u.washington.edu, and Lauren Zeise, phone: 510-622-3190, fax: 510-622-3211, e-mail: lzeise@berkeley.cahwnet.gov

Nominations: Yacov Y. Haimes, phone: 804-924-3803, fax: 804-924-0865, e-mail: haimes@virginia.edu

Publications: Gail Charnley, phone: 202-543-2408, fax: 202-543-3019, e-mail: healthrisk@aol.com

Publicity: Gail Charnley, phone: 202-543-2408, fax: 202-543-3019, e-mail: healthrisk@aol.com

Specialty Groups: Dale B. Hattis, phone: 508-751-4603, fax: 508-751-4600, e-mail: dhattis@aol.com

History: Paul Deisler, phone: 512-480-9810, fax: 512-480-9810, e-mail: sinprisa@earthlink.net and Richard Schwing, phone: 810-667-8500, fax: 810-667-9597, e-mail: richard.schwing@gm.com

Ad Hoc Committees

Public Policy: John "Jack" R. Fowle III, phone: 202-564-4547, fax: 202-501-0323, e-mail: Fowle.Jack@epamail.epa.gov

SRA 2000 World Symposium and Congresses: Rae Zimmerman, phone: 212-998-7432, fax: 212-995-3890, e-mail: rae.zimmerman@nyu.edu

Outreach ad hoc Task Force, Membership/Diversity: F. Owen Hoffman, phone: 423-483-6111, fax: 423-481-0060, e-mail: senesor@senes.com, and Michael Greenberg, phone: 732-932-0387, fax: 732-932-0934, e-mail: mrg@rci.rutgers.edu, and William Farland, phone: 202-564-3322, fax: 202-565-0090, e-mail: farland.william@epa.gov

Publications/Electronic Media Interface: Mitchell Small, phone: 412-268-8782, fax: 412-268-7813, e-mail: ms35@andrew.cmu.edu

Jim Butler, Webmaster, phone: 630-252-9158, fax: 630-252-4336, e-mail: jpbutler@anl.gov

Internationalization: John Vandenberg, phone: 919-541-4527, fax: 919-541-1440, e-mail: vandenberg.john@epamail.epa.gov, and Alison Cullen, phone: 206-616-1654, fax: 206-685-9044, e-mail: alison@u.washington.edu

Improving Science: Dale Hattis, phone: 508-751-4603, fax: 508-751-4600, e-mail: dhattis@aol.com

Specialty Group Contacts

Dose Response: Peg Coleman, President, phone: 202-501-7379, fax: 202-501-6982, e-mail: Peg.Coleman@dchqexs1.hqnet.usda.gov

Ecological Risk Assessment: Bruce Hope, Chairperson, phone: 503-229-6251, fax: 503-229-6954, e-mail: hope.bruce@deq.state.or.us

Engineering: Ali Mosleh, phone: 301-405-5215, fax: 301-314-9601, e-mail: mosleh@eng.umd.edu

Exposure Assessment: Susan Youngren, phone: 202-293-5374, fax: 202-293-5377, e-mail: syoungren@novigensci.com

Food/Water Safety Risk: Roberta Morales, Secretary, phone: 919-485-2661, fax: 919-541-6683; e-mail: morales@rti.org

Risk Communication: Ragnar Löfstedt, Chair, phone: 617-432-1723 (direct), 617-432-4497 (switchboard), fax: 617-432-0190, e-mail: rlofsted@hsph.harvard.edu

Risk Science & Law: Wendy Wagner, Chair, phone: 440-892-3433, fax: 440-892-1158, e-mail: wagner9@attglobal.net



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Genevieve S. Roessler, *Editor*, gnrsslr@frontiernet.net
 Mary A. Walchuk, *Managing Editor*, mwalchuk@mctcnet.net
 Sharon R. Hebl, *Editorial Associate*

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Members of SRA Council:

Alison C. Cullen, 1997-2000, alison@u.washington.edu
 Michael Greenberg, 1999-2002, mrg@rci.rutgers.edu
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 F. Owen Hoffman, 1998-2001, senesor@senes.com
 Paul Locke, 1998-2001, locke@eli.org
 Dennis J. Paustenbach, 1997-2000, dpaustenbach@exponent.com
 Mitchell Small, 1999-2002, ms35@andrew.cmu.edu
 John Vandenberg, 1999-2002, vandenberg.john@epamail.epa.gov
 Lauren Zeise, 1998-2001, lzeise@berkeley.cahwnet.gov

Secretariat: Richard J. Burk Jr., Executive Secretary, Society for Risk Analysis, 1313 Dolley Madison Blvd., Suite 402, McLean, VA 22102; phone: 703-790-1745; fax: 703-790-2672; e-mail: SRA@BurkInc.com

Publications Chair: Gail Charnley, HealthRisk Strategies, 826 A St. SE, Washington, DC 20003; phone: 202-543-2408; fax: 202-543-3019; e-mail: healthrisk@aol.com

Newsletter Contributions: Send to Mary Walchuk, Managing Editor, RISK newsletter, 115 Westwood Dr., Mankato, MN 56001; phone: 507-625-6142; fax: 507-625-1792; e-mail: mwalchuk@mctcnet.net

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, 115 Westwood Dr., Mankato, MN 56001; fax: 507-625-1792; e-mail: mwalchuk@mctcnet.net, and let us know what you think. ◇◇◇

Deadline for RISK newsletter Submissions

Information to be included in the **Third Quarter 2000** SRA RISK newsletter, to be mailed mid-August, should be sent to Mary Walchuk, RISK newsletter Managing Editor (115 Westwood Dr., Mankato, MN 56001; phone: 507-625-6142; fax: 507-625-1792; e-mail: mwalchuk@mctcnet.net) no later than **5 July**.

SOCIETY FOR RISK ANALYSIS
1313 Dolley Madison Blvd., Suite 402
McLean, VA 22101