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SRA-Europe's Tenth Anniversary Celebrated at 1997 Annual Meeting in Stockholm, Sweden

Britt-Marie Drottz Sjöberg
Lennart Sjöberg

The European Section of SRA held its tenth anniversary meeting 15–18 June 1997 in Stockholm, Sweden, at the Stockholm School of Economics. The theme of the meeting was "New Risk Frontiers." The conference organizers were the Center for Risk Research, the Center for Safety Research, and Riskkollegiet. The conference director was Britt-Marie Drottz Sjöberg, Professor at the Norwegian University of Science and Technology's Department of Psychology. She arranged for much of the sponsorship and commissioned artist Jonas Ekstrand-Andersson to prepare the cover for the proceedings volume and another artist to prepare an opening video on the conference theme. Drottz Sjöberg also edited the proceedings, which came close to 1,000 pages, published by the Center for Risk Research, at the Stockholm School of Economics, in the monograph series Rhizikon. There are still a few copies available of the Proceedings volume; contact secretary Kristina Eddon (pke@hhs.se) for further information. Lennart Sjöberg of the Stockholm School of Economics played a key role in the conference as one of the members of the organizing committee, together with Torbjörn Thedeen.

Lennart Sjöberg and Britt-Marie Drottz Sjöberg

The Conference drew 302 registered participants from 27 countries. We had the pleasure to welcome participants from most European countries, and also from countries as far away as Japan, Australia, the United States, and Canada. Approximately 100 participants, excluding the students, became full SRA members through

Marc Poumadere, Britt-

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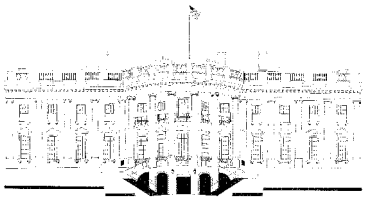

1997 Annual Meeting in Washington, D.C.

When Yacov Haimes became President-Elect of the Society for Risk Analysis last December, he had many plans for making the 1997 Annual Meeting a key factor in building bridges among the various disciplines involved in SRA and supporting those disciplines in the process of learning from each other. The Annual Meeting, with the theme "Improving Public Policy Through Risk Assessment and Risk Management," will be held 7–10 December in Washington, D.C., and, aided by the location of the meeting and by changes in the meeting format, is designed to fulfill those plans.

"Many of the sessions will involve top-level government people," Haimes said. "Holding the meeting in Washington, D.C., made it easier to get them to come because they didn't have to travel somewhere far." Plenary speakers will include General Alton D. Slay, President of Slay Enterprises, Inc., who chaired the National Research Council's Committee on the Challenger disaster, and Dr. William A. Wulf, President of the National Academy of Engineering. Holding the meeting in Washington, D.C., will also enable the participation of William H. Farland, Director of the National Center for Environmental Assessment, U. S. Environmental Protection Agency; Robin Cantor, managing economist with the Law and Economics Consulting Group; and John Leland, from the National Science Foundation; they will moderate evening discussion sessions.

One of the changes included in this

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(SRA-E in Stockholm, continued from page 1)
their registration at the conference, and will become new subscribers to *Risk Analysis* and the RISK *newsletter*.

The conference organization was facilitated by economic support from several Swedish organizations and authorities: the Stockholm School of Economics (HHS), the Center for Risk Research (CRR), the Foundation for Risk Research (SRF), the Swedish Council for Planning and Coordination of Research (FRN), the Swedish Nuclear Fuel and Waste Management Company (SKB), the Civilian Defense Board (ÖCB), the Swedish Rescue Service Agency, the Swedish Nuclear Inspectorate (SKI), the Swedish Radiation Protection Institute (SSI), and Forsmark Nuclear Power Plant.

Tour of Forsmark Nuclear Power Plant Attended by Nearly 100 Participants on Sunday Before the Conference

Furthermore, Forsmark Nuclear Power Plant provided buses and guided nearly 100 people on a tour of its repository for medium-level radioactive waste at the plant on the Sunday before the conference.

The conference included about 200 sessions devoted to topics such as risks from radiation, modeling of catastrophic risk, perceptions, media and ethical issues in risk assessment, methodologies for evaluating uncertainty, and risks from a variety of technologies. The meeting opened with a reception for all attendees at the Stockholm City Hall.

Incoming President Philippe Hubert and Outgoing President Ortwin Renn

At the meeting, Philippe Hubert of ISPN, Paris, became the incoming president of SRA-E and Ortwin Renn became the outgoing president.

The new *Journal of Risk Research*, under the editorship of Ragnar Löfstedt and published together with the Japanese section of SRA, was formally announced at the meeting.

Drottz Sjöberg moderated the opening plenary session on Monday which was devoted to reminiscences about the ten-year history of the Section and future issues, and Renn gave a welcome address.

Marc Poumadere, one of the Section's first presidents, opened his remarks with the observation that risk analysis has had a long past yet a short history. He recounted the fact that the Section has maintained connections over the past ten years with the SRA through the Journal and through representation on the Council. For example, Pieter Jan Stallen served on the Council from 1985–1987, Ola Svenson from 1986–1989, and Tony Cox after the Section had been formalized. In addition, many Europeans have been involved in the Journal.

Language has been a problem for the Section, since members are from 26 countries. In 1987, the Section started with only 69 members and it has now grown to 317. The United Kingdom has the largest membership in the Section, with close to 100 members. The Swedish membership, is however, larger in relation to the size of the country.

Poumadere indicated that there is a need to exchange programs among the countries and also a need to manage risk assessment differently in Europe than in the United States. The United States has a unified language and to some extent, he noted, a relatively unified culture. The European Section has to be innovative in order to integrate the 26 countries. The Section needs different methods of measuring success—in particular, for measuring how relevant technologies are in different countries.

Marc Poumadere and Rae Zimmerman

At the second plenary session on Monday, SRA President Rae Zimmerman addressed the nature of future risks that the Society will face, and how to identify and manage them. Zimmerman pointed out that the concept of risk is here to stay, and drew lessons from the history of surprises to help identify precursors of future risks. She noted that the capacity to understand and anticipate risks lies in paying greater attention to extreme events, which can be harbingers of new risks. Extremes are often unnoticed, since methods of analysis are either not sensitive to them or filter them out, regarding them as anomalies. Also, changes in the

Ragnar Löfstedt

patterns and directions of human settlements give clues to some of the risks to which human populations will be exposed in the future.

Finally, she presented a case study on a problem that involved both actual and perceived risks in many localities in the United States—that of the removal of lead-based paint on bridges. It illustrated how, with all of the standards and protocols that existed to manage the risks of such an activity, none ended up being suitable; that is, none of the pre-existing mechanisms and institutions were able to anticipate a new risk. Thus, we need processes that are sensitive to the unusual, since these may be the signs of future directions, and much of science is not adapted to that.

Paul Slovic, who was recently awarded an honorary doctorate at the Stockholm School of Economics, addressed the theme of why risk and risk assessment are so controversial, drawing from much of his original work in the field.

Paul Slovic

He noted that risk analysis breeds fear, and stated, "The language of risk is a mess." He argued that there is no such thing as real risk—it is always value-laden and socially constructed. He felt that one needs to draw on decision analysis to inform risk assessment and risk management. As we become healthier and safer we become more concerned about risk, since there is a dichotomy between real and perceived risk. Risk communication was an early attempt to link the two.

He gave some partial answers to why perceived risk has increased: risk assessment has grown and developed, and studies breed fear; just studying a problem and reporting on it breeds fear; and the measures are value-laden. He quoted from the National Research Council report "Improving Risk Communication" (National Research Council 1989) which stated that defining risk is an exercise of power, and whoever defines risk has the power.

Slovic then presented his findings on male-female differences in risk perception as illustrative of the nature of perceptions. Slovic concluded by saying that trust and public confidence are at the heart of managing risks. Trust is very susceptible to being undermined, and can be wiped out with one bad event.

Other plenary speakers presented the following research papers which were made available at the conference:

• At the end of the Monday plenary, Ulf Rydberg of the Karolinska Institute presented a plenary address titled "Alcohol and Health: Individual Risks and Benefits."

• At the Tuesday Plenary Session, Peeter Luksep, Senior Vice President of Kreab AB, presented a paper on the M/S Estonia Disaster.

• Saburo Ikeda, representing the Japanese Section, presented a paper titled "Chemical Risk Management and Practice in Japan—Toward A New Management Perspective."

• At the Wednesday Plenary Session Marvind Rausand presented a paper, with his co-author Bjorn Egil Asbjonslett, titled "Vulnerability of Production Systems."

Several prizes were awarded at the closing ceremony:

• The SRA-E Distinguished Scientist Award was given to Alexei Chernoplekov, Risk Management Director at Lukoil, Moscow, and the Distinguished Achievement Award was given to Ola Svenson, Stockholm University. These prizes were awarded by the Executive Committee of SRA-E.

Distinguished Achievement Award Winner Ola Svenson

• Three prizes were awarded by the Foundation for Risk Research in relation to presentations at the conference. The decisions had been made by the Technical Program Committee, and each prize included the sum of SEK 10,000.

The Best Full Paper prize was awarded to S. Bonvicini, P. Leonelli, and G. Spadoni for the paper "Uncertainty Evolution Using Fuzzy Logic in Risk Analysis of Hazardous Materials Transportation."

Best Student Paper Award Winner Nathalie de Marcellis

The Best Student paper award was given to Nathalie de Marcellis for her presentation of the paper "New Insurability Frontiers: A Temporal Study."

The prize for the Best Poster went to J. E. Ince, E. B. Heller, and C. E. Fisher for " Research on Consumer Perceptions Funded by the UK Ministry of Agriculture, Fisheries and Food."

• In addition, the Kjell Gunnarson Risk Management stipend, SEK 15,000, was awarded to T. Y. Ermolieva, Yu. M. Ermoliev, and V. I. Norkin for "On the Role of Advanced Modelling in Managing Catastrophic Risks." ◆◆◆

SRA-Europe's 1997 Annual Meeting

15–18 June in Stockholm, Sweden

photo courtesy of Vladimir Zimin

The Opening Reception

photo courtesy of Vladimir Zimin

Igor Suskov, Institute of Bereral Genetics, and Vladimir Zimin, Ecologist, Susnory Bor, Russia

Joanne Linnerooth-Bayer

Forsmark Nuclear Power Plant Repository Tour

Forsmark Nuclear Power Plant Tour

Forsmark Tour Information at Cafe

SRA-Japan

SRA-Japan—Section Activities

The Spring Symposium and Annual Business Meeting of SRA-Japan, with the theme "Globalization and Risk Management," was held 27 June 1997 at San-zyou Memorial Hall, Tokyo University, Tokyo.

The Invited Keynote Lecture, "Risk Management in Changing Times," was given by Professor Yasushi Morimiya, Maizi University, and concerned changes of hazards identification, perceptions, and risk management in financial business sectors, focusing on deregulation issues.

Four panelists from industry, regulatory, and consulting firms gave their opinions on:

• Deregulation in the insurance and financial business,
• International harmonization of safety standards and safety confirmations,
• Recent trends in the technology for seismic risk evaluation and deregulation,
• Traditional ways of risk management in Japanese business firms, and
• Problems of deregulation.

Quite a number of questions and comments were discussed among approximately 60 panelists and participants. Proceedings of the symposium (40 pages in Japanese) were printed.

At the annual business meeting, the 1997 budget and activity plan were approved. Major topics and planned activities included:

(1) A special issue of the *Japanese Journal of Risk Analysis: SRA 95 Hawaii Joint Conference* which will be published with 23 selected papers (in English) in October 1997.

(2) The joint publication of the *Journal of Risk Research* by SRA-Europe and SRA-Japan.

(3) The plan for the ten-year anniversary of SRA-Japan in 1998, including the "Japan-China Conference on Risk Assessment and Management" in Beijing, China.

(4) A research contract with the Division of Environmental Health and Safety, the Environment Agency-Japan, to produce a report on "Risk Perception in Japanese Society," 1996–1997. A part of the research result (based on the public survey) will be presented at our 1997 annual meeting.

(5) A seminar on "Hazardous Chemicals Risk Management: Introduction and Recent Regulatory Systems and Measures," held 4 September 1997 in Tokyo. About 100 people attended.

(6) The 1997 SRA-Japan Annual Meeting to be held 20–21 November 1997 at Woods Hall, Kyoto University, Uji-Campus, Kyoto. The conference theme is "Comprehensive Risk Management for Environmental Disasters," and the conference program is already arranged with 30 presentations. Two special sessions will be held: (a) a Symposium on "What Kinds of Research Issues and Methodologies are Necessary to Promote the Risk Analysis on Societal Management of Global Risks and Health and Environmental Risks in Order to Make a Proposal for a Governmental Research Grant," with Organizer Professor Saburo Ikeda, and (b) a Panel Symposium on Prevention of Large-Scale Environmental Disasters: Lesson from "Oil Pollution from the Tanker Accidents in the Japan Sea," organized by Professors N. Okada and Y. Hagihara, Kyoto University. Panelists from multi-disciplinary fields have been invited to discuss the experiences and lessons from the accidents by Russian oil tanker (Nahotoka) in January 1997.

The Section published the proceedings of its spring symposium on "Globalization and Risk Management" in the *Japanese Journal of Risk Analysis*, Volume 9, 1997, which is written in Japanese and includes the table of contents and the abstracts in English. Those are available upon request to Saburo Ikeda, Secretariat, SRA-Japan, Institute of Policy in Planning Sciences, University of Tsukuba, phone: 81-298-53-5380, fax: 81-298-55-3849, e-mail: <ikeda@sk.tsukuba.ac.jp>. ◆◆◆

(Washington, D.C., Meeting, continued from page 1)

year's meeting will be nugget sessions, which will involve many speakers who are distinguished risk experts. "For the nugget sessions, I invited top people in the field," Haimes said. "During each session there will be only two papers given, and instead of 20 minutes I gave the speakers 45 minutes to go in depth on the topic. We went big on this one and hope to do it again next year."

Another change involves the presentation of posters. "We have designated the luncheon on Wednesday to be a box lunch for posters to encourage people to come see them," Haimes explained. "We also allocated time for poster sessions so we have several specific session slots, allowing everyone to plan time to see the posters."

The scheduling of sessions will also be handled differently, in a manner allowing attendees to plan ahead as to which sessions to attend. "Ninety percent of all the sessions have only four speakers and each has a specified time slot," Haimes said. "People will know when each talk will be presented and if a speaker does not show, that slot will not be filled in with the next speaker. The session chairmen will see that the schedule is adhered to."

Haimes also felt it would help people plan if they received a program early this year. "This is the first time that a preliminary program was mailed this early to all members," he stated. "I would like to thank very, very strongly all the members of the program committee who worked so hard on the selection of the papers and on constructing the program; it was a major marathon." Haimes indicated that because the program was mailed out so early, there will most likely be changes by the time the program is finalized for the meeting. "We will have fine tuning in the program to accommodate major personal needs of the speakers, which is to be expected when working so far ahead of time with so many people," he said, but he feels it will benefit the members to get an idea of when different sessions will take place.

Members will also have an easier time getting from the airport to the Capital Hilton for the meeting this year. From the new terminal at National Airport, attendees can now easily board the Metro for a trip right to a stop near the hotel.

Haimes is confident that all the factors involved will make the 1997 Annual Meeting a successful one. "We are learning year to year and I think it will be a smooth operation this year," he commented. ◆◆◆

Committees

Electronic Media Committee

Steve Brown, SRA Webmaster

The SRA web site welcomed its 6,000th visitor on 9 September 1997 and is still gaining new members for the Society. One of the most popular features is the "Opportunities" page where employment openings, fellowship programs, and grant opportunities are listed. We're not sure whether any visitor has succeeded with one of the opportunities, but we know that applications have been received because of the page.

A policy on posting events, along with a cost schedule, is being developed by SRA.

Volunteers are now working on the "Related Sites" area, which will soon feature many more links to sites that may be of interest to SRA members and other visitors.

We still want your feedback for suggested improvements!

Section and Chapters Committee

Charles Menzie, Chair

We are making arrangements to provide speakers from the SRA to the Rocky Mountain, Ohio, and Chicago Regional Chapters for upcoming chapter meetings. Other chapters interested in scheduling speakers for meetings should contact Charlie Menzie, Chair of the Section and Chapters Committee, by phone: 508-453-4300, fax: 508-453-7260, or e-mail: <Charliemen@aol.com>.

Public Policy Committee

Gail Charnley, Chair

On 9 September 1997 the Society for Risk Analysis held the second in its series of public policy symposia—Are Environmental Health Regulations Making Us Healthier?"—at the National Press Club in Washington, D.C. The luncheon symposium was cosponsored by the American Chemical Society's Risk Education Project. It addressed the extent to which public health programs and environmental health regulations intersect and contribute to improving human health. The symposium was moderated by Tom Burke, Associate Professor of Environmental Health Policy at the Johns Hopkins School of Public Health, and included Congressman Sherwood Boehlert (D-NY), chair of the House Transportation and Infrastructure Committee's Subcommittee on Water Resources and Environment; Richard Jackson, Director of the National Center for Environmental Health at the Centers for Disease Control; Jonathan Adler, Director of Environmental Studies for the Competitiveness Enterprise Institute; and Karen Florini, Senior Attorney, Environmental Defense Fund.

Dr. Burke pointed out that it is difficult to consider environmental regulations without considering public health. Nonetheless, Earth Day narrowed the definition of "environment" to its current statutory context, establishing both philosophically and fiscally an agenda that is separate from that of the traditional public health community. We have an enormous regulatory infrastructure now that is driven by media-specific and source-specific approaches that narrow the focus of state and local health and environmental agencies. For example, there are environmental data available for south and southwest Philadelphia that show dramatic environmental improvement. There have been tremendous improvements over the last 20 years for the narrow parameters we use to characterize the environment, such as TRI releases, ozone exceedances, chemicals in drinking water, air quality, water quality, emissions. Meanwhile, mortality rates for the five leading causes of death are substantially higher there than in the rest of the United States. A substance-by-substance regulatory approach is not going to clarify the fundamental public health issues underlying those increased risks. A truly public health approach to environmental health protection is needed. Such an approach is not meant to be anti-regulatory, but should be seen as a true partnership between the public health and environmental health communities.

Congressman Boehlert looked at the broader question of how Congress behaves in the face of conflicting scientific opinion: not very well. Members of Congress yearn for certainty and absolutes, for yes-or-no answers, which is inconsistent with scientific principles. Congress wants scientific consensus, but then ignores it for political reasons and picks and chooses among differing scientific theories. Instead, Congress should rely on scientific consensus and gauge the level of scientific uncertainty and the basis for scientific dissent. Congress should learn to deal with and address uncertainty but not overstate it and become more comfortable using value judgments to make decisions about science-based issues. Members of SRA can help by establishing relationships with individual members and staff and laying out for them all sides of risk issues without overstatement.

Dr. Jackson noted that $1 of every $8 of the gross national product is spent on medical care but only 1 percent of that amount is devoted to prevention. The worst environmental hazard is poverty, and the increases in lifespan and improvements in health experienced over the last century are due primarily to increases in quality of life. There is only a thin wire connecting the worlds of environmental health and public health, but when they have worked together, the results have been outstanding. The best example is lead. Overall blood lead levels in the United States have dropped dramatically thanks to the removal of lead from gasoline, a joint public health and environmental regulatory effort. The Environmental Protection Agency should not be setting important regulatory standards or making major environmental health decisions without first consulting the public health community. The public health community should be part of the decision-making process from the start and not just brought in for comments at the end. The weakest links in assessing the public health impacts of environmental health regulations are surveillance and human biomonitoring. All of the environmental data in the world are useless without

... $1 of every $8 of the gross national product is spent on medical care but only 1 percent of that amount is devoted to prevention.

knowledge of contaminants' disposition in the human target of concern. This is an area that is seriously underfunded.

Mr. Adler believes that environmental regulations are no longer having an impact that is commensurate with the costs of compliance. This is partly due to the fact that we have addressed the easier problems and are now left with the more expensive and complicated problems. We spend over $150 billion annually on pollution control, an amount that is five times greater than what was spent in 1972. There are many more cost-effective ways to increase life expectancy than pollution control and we should be able to direct our risk management resources where they will have the greatest impact and do the most good.

Ms. Florini noted that anyone who doubts that environmental regulations have improved public health should look at what happened in Eastern Europe. She described a recent study by the Environmental Defense Fund, Toxic Ignorance, which indicates that the most basic toxicity testing results cannot be found in the public record for 71 percent of the 100 high-volume chemicals in commercial use that were evaluated. It is difficult to set environmental health or public health priorities when we have no information for so many of the chemicals that might be of concern. In the absence of data on their toxicity, chemicals are generally assumed to be safe and routine exposure is permitted. We need to address these substantial data gaps and stop treating ignorance as bliss.

Dr. Burke concluded that environmental health is where the money is, not public health. The absence of fundamental data on the baseline health of the population contributes to major problems in making effective environmental health decisions.

Conferences and Workshops Committee

Elaine Faustman

Biologically Based Dose Response Modeling: Fact or Fiction?

The Society for Risk Analysis hosted a highly successful forum titled "Biologically Based Dose Response Modeling: Fact or Fiction?" in Annapolis, Maryland, on 2–3 June. The forum was organized by Drs. Elaine Faustman, Betty Anderson, and Patricia Bittner and was designed as an update and critical review of the development and use of biologically based dose response (BBDR) models for risk assessment. The timeliness of this workshop was especially significant given the recent releases of the President's Risk Commission report and U.S. Environmental Protection Agency (EPA) guidelines for cancer, reproductive toxicity, and neurotoxicity. These reports have presented challenges for incorporating science into risk assessment and the presentations were directed to these challenges.

The forum opened with an introduction by Dr. Anderson, who provided historical perspective for the initial development of EPA cancer risk assessment guidelines and the use of the linear multistage model. Dr. Suresh Moolgavkar discussed the Moolgavkar-Venson-Knudsen (MVK) model, describing the utility of this model for breaking down large and complex biological problems in cancer into testable hypotheses. He gave two examples of the utility of this biologically based model: evaluating the age of radiation exposure on cancer incidence in A-bomb survivors and evaluating differences in lung cancer incidence in two populations of coke oven workers.

Presentations by Drs. James Swenberg and Dave Gaylor focused on scientific issues in defining the shape of the low-dose response curve. Swenberg shared new biomarker research on DNA and hemoglobin adducts and discussed how these types of biomarker information can be used to define the dose response curve at low doses for adducts generated from exposure to chemicals as well as from endogenously generated processes. He used numerous examples including ethylene, 1,3 butadiene, and nitrosamines, but highlighted the complexities of biomarker information including examples of some agents producing over 20 adducts, the different functional significance of adducts (for example mutagenic versus nonmutagenic), and the different kinetics of adduct formation dependent upon species differences, organ specific metabolism, detoxification pathways, and differences in exposure routes. Gaylor discussed the shape of the low-dose response curve in relationship to model assumptions. For example, he discussed the impacts of different background rates of cancer on curve shape, assumptions of additivity, and implications of setting "risk" versus "no effect" levels for mechanistic models. His talk led directly into the talk by Dr. Mel Anderson who discussed approaches and examples of uniting BBDR models with physiologically based pharmacokinetic (PBPK) models. In particular he discussed the differences in how pharmaceutical industries have successfully used PBPK models (within species of interest and for interpolation across humans within the narrower therapeutic range). In risk assessment the difficulties arise when we extrapolate to very low doses that are more environmentally relevant but for which we have minimal data. Dioxin was one example Anderson discussed, suggesting a more detailed examination of the kinetics of gene induction and how we are modeling this response. His work suggests that determination of the overall "area under the response curve" may not be the preferred option but that " daily peak" or average daily concentrations may prove more useful in the construction of linked BBDR and PBPK models.

Dr. Dale Hattis discussed methods for evaluating uncertainty for BBDR models. In particular he described his research evaluating variability within and across species and the implications of this information for mechanistic models for neurotoxicity.

Drs. Woody Setzer and Elaine Faustman described BBDR models for developmental toxicants. Both speakers highlighted the complexity of biological processes during development given the significant differences in differentiation and growth. Setzer described the work that the EPA is doing on developing BBDR models for the neurotoxicant acrylamide and 5-fluorouracil as a developmental toxicant. Faustman described a model for developmental toxicants that was designed using a variation of the MVK model from Moolgavkar where chemical impacts on cell differentiation, growth, and death could be evaluated at the same time. She described applications of this model to evaluate methyl mercury's impact on nervous system development.

The last presentation was by Dr. George Gray who described distributional approaches used for characterizing low-dose risks and discussed expert elicitation approaches for improving the use of mechanistic information in BBDR models for risk assessment.

This forum featured a panel discussion with regulators from four different agencies: EPA, U.S. Occupational Health and Safety (OSHA), U.S. Food and Drug Administration (FDA), and Health Canada. The panelists were asked to respond to the

questions asking if and how BBDR models were being used in their agencies and what future steps they would like taken to improve the utilization of these methods.

Dr. Jeanette Wiltse from EPA stated that EPA is using and is encouraging use of BBDR models for cancer risk assessment. She described how mechanistic information can be especially useful to inform risk assessment and she encouraged model development, especially the construction of general models of critical phenomena in toxicology as an approach to improve our use of good science. Dr. Pat Hansen discussed work within FDA to improve the use of biological information in its policies on food additives, micronutrients, and migration of agents into food. She cited several examples including reference to a working group that is evaluating how short-term information could be more effectively incorporated into FDA risk assessments. Dr. Adam Finkle from OSHA was more cautious in his enthusiasm on how quickly BBDR models would prove useful for assessment of occupational hazards. He cited examples where the biological databases were minimal or unbalanced in their ability to inform risk assessments and discussed his agency's approaches for incorporating biological information into the recent methylene chloride risk assessment. Dr. Dan Krewski described how Health Canada was using biological information to inform risk assessments but cautioned against the need to know every nuance in the biological mechanism before the information would be useful in risk assessment. He described Canada's approaches for risk assessment for occupational risks, biotechnology risks, and detailed modeling approaches for regulating air and water quality. His examples included application of uncertainty analysis and sensitivity evaluation of PBPK models. He also described the first applications of distributional analysis by regulatory agencies to set plausible values for maximum acceptable concentrations for tetrachloroethylene.

Although none of the forum presenters dismissed the difficulties in developing BBDR models, all of the conference participants provided valuable examples of how to incorporate such mechanistic information to improve risk assessments. The audience was composed of many experts in this area and added greatly to the examples and discussion. The forum served a very useful purpose in providing the opportunity for discussion of this increasingly important area of assessment.

Society for Risk Analysis Presents
Health Risk Assessment: Current Issues
Tenth Annual Symposium

The Conferences and Workshops Committee is pleased to announce this year's program for the Tenth Annual Symposium on Health Risk Assessment: Current Issues. This year the Committee is chaired by Elizabeth L. Anderson; Committee members are Richard Becker, Patricia Bittner, Willard Chappell, Lawrence Gratt, and Virginia Sublet. The program is scheduled to take place in Monterey, California, at the Monterey Plaza Hotel, 6–8 October 1997. The first two days of the program will focus on the most recent guidance in risk assessment including presentations by Dr. Richard Becker, Director of the Office of Environmental Health Hazard Assessment, California Environmental Protection Agency (Cal/EPA); Dr. Robert Huggett, past Assistant Administrator for Research and Development, U.S. Environmental Protection Agency; and Dr. Mildred Christian, CEO, Argus International. Implementation of risk assessment will be further discussed in presentations by Dr. Suresh Moolgavkar on biologically based modeling and Dr. Thomas McKone on exposure assessment techniques. The issue of variability and uncertainty will be discussed by Dr. David Burmaster. An update on risk management and recent developments will be discussed by Dr. Lester Lave, and the current President of the Society for Risk Analysis, Dr. Rae Zimmerman, will discuss the social foundations of risk communication.

The third day of the symposium is made up of three case studies. The purpose of the case studies is to explore the scientific uncertainties in each case from a risk assessment standpoint and enlighten listeners about the scientific basis for decision making. The first case study in the morning will be on the risk assessment of diesel exhaust and will include speakers from the State of California who will present the California draft risk assessment. Dr. Eric Garshick, the author of one of the key epidemiology studies, will speak about the epidemiology of diesel risk assessment. Both Dr. Kenny Crump and Dr. Stanley Dawson will present their dose response analyses which, in each case, are based on the Garshick studies. Peer commentary on these efforts will be presented by Moolgavkar. Dr. George Maldonado will also critique the current and future epidemiology efforts as well as comment on the risk assessment work. A panel discussion will follow the diesel case study.

The afternoon session on 8 October is made up of two concurrent sessions. One session is focused on the case study the Risk Assessment of Environmental Tobacco Smoke (ETS). The recent California risk assessment will be presented by Dr. Lauren Zeise. Dr. Roger Jenkins will discuss his recent work on ETS exposure monitoring and Dr. Bob Tardiff will discuss his analysis of these monitoring results. The epidemiology studies will be reviewed by Dr. Michael Thun of the American Cancer Society and Dr. William Butler of Environmental Risk Analysis. The EPA risk assessment will be presented by Dr. Steven Bayard. Dr. Maurice Levois will also make a presentation on ETS risk assessment. The peer commentary on this session will be delivered by Dr. David Hoel, Professor and Chairman, Department of Biometry and Epidemiology at the Medical University of South Carolina, and by Dr. Gary Friedman, Director, Epidemiology and Biostatistics, Research Division of Kaiser Permanente. This session will be followed by a panel discussion. The concurrent session will be presented on the topic of "Issues Encountered in the Assessment of Health Risk of Essential Elements." Participants will include individuals from the Cal/EPA Office of Environmental Health and Hazard Assessment as well as from the U.S. Department of Agriculture and the academic communities. A panel discussion will follow this session to specifically focus on approaches for quantitative risk assessment of essential elements.

Both the first two days, which are intended to focus on current issues in risk assessment, and the third day, which will focus on case studies, promise to be extremely interesting sessions. The Society for Risk Analysis has reserved a block of rooms at the Monterey Plaza Hotel. Early reservations are encouraged since these rooms are being booked rapidly. Registration for the symposium may be arranged through the Secretariat, phone: 703-790-1745 or fax: 703-790-2672. The phone number for the Monterey Plaza Hotel is 908-646-1700. We look forward to an exciting session and hope that many of you will be able to join us.

U.S. Chapter News

Chicago Regional Chapter

The Chicago Regional Chapter of the SRA and the Midwest Regional Chapter of the Society for Environmental Toxicology and Chemistry (SETAC) will hold a joint topical meeting on Ecological Risk Assessment at Argonne National Laboratory (ANL), Argonne, Illinois, 1–3 April 1998.

Plans for the three-day meeting are in the conceptual stages and a formal Call for Papers will be issued in the winter. This will be the first joint meeting between the local SRA and SETAC Chapters. Tentative topics include exposure models, environmental fate and transport, ecological risk assessment, and endocrine disruptors. The format will consist of workshops, poster sessions, and oral presentations.

The preliminary program will consist of three workshops during the afternoon session on Wednesday, 1 April. The tentative workshop topics include probabilistic risk assessment, natural resource damage assessment, and benchmark values. Thursday, 2 April, will consist of a joint SRA/SETAC meeting during the morning session and separate sessions in the afternoon. A joint session of the SRA and SETAC will be held Friday morning, 3 April, followed by a tour of the ANL facility that afternoon.

The meeting is being coordinated by Brenda Jones and Chuck Maurice of EPA Region V (312-886-7188), Dr. Ihor Hlohowskyj of Argonne National Laboratory (630-252-3478), and Sean Dundon of GaiaTech, Inc., (312-541-4200). The Call for Papers will be posted on the web sites for SRA and SETAC, and further information will be provided in future issues of the RISK *newsletter.*

Lone Star Chapter

The Lone Star Chapter is planning its first annual chapter conference and banquet for Saturday, 15 November 1997, in San Antonio, Texas. The keynote speaker for the conference will be Dr. Dennis Paustenbach, former President and CEO of McLaren/Hart Inc. and founder of the company's ChemRisk® division. This will be an exciting opportunity to:

- learn from informative presentations given by prominent experts regarding current developments in risk assessment,
- meet and visit with colleagues from around the state, and
- enjoy a banquet and hospitality at the elegant and historic Camberley Gunter Hotel near the San Antonio Riverwalk.

More details and a registration form for the Lone Star Chapter conference are available on the Chapter's web page at <http://members.aol.com/sralsc>. For more information please contact Dr. B. C. Robison at 281-579-8999.

National Capital Area Chapter

The National Capital Area Chapter elected the following new officers: President-Elect, Dr. Christine Chaisson, TAS, Inc.; Councilor, Dr. Diana Wong, ABB Environmental Services; and Councilor, Dr. Heather Jaffan, System Sciences, Inc. The Chapter has sent out a notice to solicit nominations for the Treasurer and Secretary seats. The Chapter gives special thanks to Dr. Lee Abramson, Nuclear Regulatory Commission, for his 14 years of dedicated service to the Chapter as Treasurer since the establishment of the Chapter in 1983. He has done an outstanding job managing the Chapter's finances. The new Chapter officers plan to meet to develop formal programs for the Chapter for 1997–98. If you have any questions about the Chapter, please contact Dr. Christine Chaisson, TAS, Inc., 4350 North Fairfax Drive, Arlington, VA 22203, 703-516-2490.

Philadelphia Chapter

Dr. Bruce Moholt, ERM, Inc., has been elected to be the incoming President of the Philadelphia Chapter. The fall program is now being planned.

Southern California Chapter

The Southern California Chapter held its Tenth Annual Meeting and Workshop, "Current Issues in Risk Management and Human Health," on 22 May at UCLA. Highlights of the Workshop included presentations on the California Environmental Protection Agency Office of Environmental Health and Hazard Assessment (Cal/EPA-OEHHA) perspective of the recently published "A Review of the California Environmental Protection Agency's Risk Assessment Practices, Policies, and Guidelines" by Dr. Thomas A. McDonald of the OEHHA and the Cal/EPA-DTSC perspective of "Using Risk Assessment to Classify Wastes" by Dr. Kimi Klein of Cal/EPA. Dr. Ralph Miles Jr. of JPL spoke about "Risk Management in the Aerospace and Defense Industry," and Aaron K. Nagayama, ARCO Products Co., discussed "Compliance with PSM Regulations, Petroleum Industry."

During the afternoon session, two Regulatory Forums were held: "Federal and California RMP" and "Air Toxics Health Risk Assessment." Each Forum revolved around a panel discussion. Panel members for the Federal and California RMP Forum included Dr. Krishna Nand, Parsons Engineering Science, Inc.; Ms. Sandra Carroll, USEPA; Dr. Frederick Lercari, California Governor's Office of Emergency Services; and Ms. Barbara Yu, Los Angeles County Fire Department. Members of the Air Toxics Health Risk Assessment Forum were Dr. Lawrence B. Gratt, IWG Corp.; Dr. Melanie Marty, OEHHA; Dr. Mark Saperstein, ARCO; Dr. Yoram Cohen, UCLA; Mr. Mohan Balagopalan, SCAQMD; and Dr. Patrick Wilson, USEPA.

In conjunction with this Workshop, the Chapter held its Annual Meeting. 1996–97 President Dr. Krishna Nand announced the results of the election of the 1997–98 Chapter Officers: President, Dr. Vincent Ho; President-Elect, Steven T. Maher; Secretary, Dr. Lawrence B. Gratt; Treasurer, Dr. John D. Kulluk; and Past President, Dr. Krishna Nand. Nand also announced the addition of four Councilors to serve from 1997–2000: Mohan Balagopalan, Paul G. Beswick, Kenneth Lew, and Thomas C. Meyers. Councilors remaining on the Executive Council include Yoram Cohen, Donald V. Greenlee, James M. Hudson, Tony Markham, and Subodh Medhekar.

For information concerning membership in the Southern California Chapter, please contact President Ho, phone: 213-312-5031, e-mail: <ho_vincent@bah.com>, or Secretary Gratt, phone: 619-531-0092, e-mail: <lgratt@aol.com>.

New England Chapter

At its first meeting of the 1997–1998 year, the New England Chapter and Boston Risk Assessment Group (SRA-NE/BRAG) presented "A Dose-Response Model for Developmental Toxicology Studies," in which Meredith Regan, Department of Biostatistics, Harvard School of Public Health, discussed a likelihood-based model for jointly assessing malformations and fetal weight outcomes in dose-response relationships. The design is an extension of a correlated probit model to incorporate continuous outcomes. The model maintains a marginal dose-response interpretation for the individual outcomes while taking into account the correlation due to clustering of animals within litters as well as correlation between outcomes on a single fetus. The overall risk due to malformation and low birth weight can then be estimated directly. This approach is particularly well suited to estimating safe dose levels for quantitative risk assessment. Also presented was "Key Concepts in the Application of Toxicology Data for Public Health Decisions at Hazardous Waste Sites with Human Exposures," with David R. Brown, NESCAUM, discussing criteria and concepts determined by the Agency for Toxic Substances and Disease Registry (ATSDR) for the use of toxicity data in the evaluation of health risk from low doses of chemicals. To determine what toxicology data are most valuable in public health decisions, ATSDR performed a critical evaluation of the potential for public health impact of more than 800 hazardous waste sites. Analysis identified data gaps and key criteria in the determination of plausibility of links between human health concerns and toxic actions of chemicals.

SRA-NE President Lorenz Rhomberg has taken the helm and we look forward to an informative and stimulating year of seminars and guest speakers. President-Elect for 1997–1998 is Dave Brown of NESCAUM. Our new Secretary is Marilyn Lourandos of Environmental Science Management. Lourandos will handle mailing of the seminar announcements and distribution of the electronic newsletter and will maintain and update our membership list. Arlene Levin of Eastern Research Group will continue to serve as Treasurer.

At the 8 October 1997 meeting SRA-NE/BRAG will host a mock direct and cross-examination of a risk assessment expert. The purpose of this demonstration is to provide insight on the use of risk assessment in the courtroom. After laying out the key elements of a toxic tort case, defense and plaintiff's counsel will question our expert in risk assessment. The demonstration will highlight the strengths and weaknesses of risk assessment from a legal perspective, and will set the stage for a panel discussion, chaired by Nicholas A. Ashford, Ph.D., J.D. Attorneys and specialists in risk communication will offer their perspectives on the use of risk assessment in toxic injury lawsuits. The discussion will focus on issues related to perceptions of risk, credibility of expert witnesses, and effective communication with juries.

For new and renewed memberships in SRA-NE/BRAG send your name, address, and affiliation to Arlene Levin, Eastern Research Group, 110 Hartwell Ave., Lexington, MA 02173, phone: 781-674-7200, fax: 781-674-2851. Dues are $15 per year for full memberships and $7.50 for student memberships.

For general information contact President Rhomberg, Harvard Center for Risk Analysis, Harvard School of Public Health, 718 Huntington Avenue, Boston, MA 02115, phone: 617-432-0095, fax: 617-432-0190, e-mail: <rhomberg@hsph.harvard.edu>.

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Risk Communication: Steven Lewis, 908-873-6063, steven.lewis@ere.exxon.sprint.com; or Bob Griffin, 414-288-6787, 6710GRIFFINR@VMS.CSD.MU.EDU

Risk Science & Law: Wayne Roth-Nelson, Interim Chair, 303-494-9694, fax: 303-494-3785, roth_nelson@compuserve.com
Annual Meeting contact: Kathleen Kunzer, 703-741-5177, fax: 703-741-6092, Kathleen_kunzer@mail.cmahq.com

Risk Science & Law

Wayne Roth-Nelson, Interim Chair

Growing Risk Science & Law Specialty Group (RSLSG) Membership

Eleven new members have registered over the last quarter, raising our current membership to 41; 22 are scientists and 19 are lawyers, including 7 lawyers who are also scientists. Many members are new to the Society. Contact Wayne Roth-Nelson for membership details and an RSLSG registration form.

1997 Annual Business Meeting

Current officers of the RSLSG are founding members who agreed to serve on an interim basis until a first election is held. Interim officers are eligible as candidates in the first election. The Interim Executive Committee wishes to receive RSLSG members' nominations of other candidates for Chairperson, Secretary-Treasurer, and Executive Committee (5 members). Any nominee found willing to serve will be added to the ballot. Please fax nominations to the Specialty Group at 303-494-3785 no later than mid-October. The RSLSG will distribute mail-in ballots early in November along with its proposed bylaws. Election of officers and adoption of proposed bylaws will be reported at the beginning of the Annual Business Meeting (Sunday, 7 December, 6–7:30 p.m.).

1997 Annual Society Meeting

RSLSG Executive Committee Member Kathleen Kunzer (Chemical Manufacturers Association) and Secretary-Treasurer Paul Locke (Environmental Law Institute) served on the Program Committee for the Society's Annual Meeting. They have organized an ambitious Specialty Group program comprising 15 papers and 7 posters for platform presentation. The papers are organized under four themes: (1) Communicating Risks to Courts, Judges, and Juries; (2) The Challenge of Making Sound Regulatory and Legislative Decisions With Uncertainty or Incomplete Information; (3) Toxic Torts and Expert Witnesses; and (4) Using Comparative Risk Results to Make Better Decisions About Health and Environmental Protection. The poster platform presentations follow the theme of Risk Analysis in the Courts.

Levin-Thompson Regulatory Improvement Act of 1997

RSLSG founding members Kathleen Kunzer, Steven Lewis, and Wendy Wagner are collaborating with Wayne-Roth Nelson to publish an article on the Internet reviewing the new bipartisan regulatory reform bill that deals with regulatory risk assessment issues, among other controversies. Look for this article on-line at <www.riskworld.com>.

Risk Communication

The Risk Communication Specialty Group is sponsoring a preconvention workshop "Working with the News Media," in conjunction with the 1997 SRA Annual Meeting on Sunday, 7 December 1997, 1–5 p.m.

"A lot of SRA members have asked for more practical advice and insights into working with reporters on risk stories," said Dr. Robert J. Griffin, vice chair/chair-elect of the SRA Risk Communication Specialty Group and director of the Center for Mass Media Research at Marquette University in Milwaukee, Wisconsin. "This workshop is custom-made to help SRA members deal more efficiently and effectively with the news media."

The workshop is being conducted by the National Safety Council's Environmental Health Center (NSC/EHC), located in Washington, D.C., and co-ordinated by EHC Executive Director Bud Ward, a former reporter.

The EHC is a not-for-profit, nonpartisan, nongovernmental organization devoted to promoting understanding of environmental health and safety risks and to improving communication among professionals and the public at large. Among EHC's projects are a newsletter for environmental reporters and the very useful booklet "Chemicals, the Press, and the Public: A Journalist's Guide to Reporting on Chemicals in the Community," which are used in newsrooms and journalism classrooms nationwide.

The workshop promises to deliver a critical analysis of the current state of reporting on environmental issues, an overview of the basics of risk communication, and insights into the fundamentals of working with the news media, accompanied by a bagful of useful tips, some useful case studies, and an exercise to help participants prepare for working with journalists doing risk reporting.

The workshop will include a panel of experienced environmental journalists and journalism educators and practitioners who will explore practical and valuable considerations involved in working with print and broadcast journalists to help them better do their job of reporting and communicating on environmental risks for their audiences.

"Communicating on environmental health risks—either perceived or real—is hard work. Demanding work. Meticulous work. There all too often is small room for error, little or no

margin of error," Ward observed. "Now take the situation that faces the mass media, print and broadcast, virtually daily—pressing and unforgiving deadlines in the face of constantly increasing competition not only from traditional news outlets, but also and increasingly from the 'new' media."

Ward said that rigorous, uncompromising deadlines are not the only factor the media face in communicating risk clearly and responsibly. "Consider too that the media routinely face conflicting, indeed often diametrically opposed, analyses and interpretations. Consider that they're dealing with multiple and diverse audiences, with varying backgrounds and abilities," Ward said. "And realize, in the end, that it is through the mass media that most citizens come to know and understand—and, it must be said, often misunderstand—their impressions of environmental health and welfare risks and opportunities."

Current plans call for Ward to kick off the workshop with an examination of environmental reporting. This segment will give SRA members a behind-the-scenes look at media ownership trends, competition for audiences, and other forces that impact on the quality of risk reporting and produce what Ward calls the "dumbing down" of the mass media.

Dr. Joseph A. Davis, NSC/EHC senior writer, is to follow with fundamentals for working with the news media, including advice on relationships with journalists, how to prepare for an encounter with reporters, what attracts the attention of the news media, how to deal with broadcast versus print media, the importance of deadlines, how to correct errors, and a variety of other tips.

Esther Tepper, NSC/EHC senior fellow, will show how to apply risk communication theory and research to dealings with the news media. Topics include the use and misuse of comparative risk data; risk voluntariness, fairness, and familiarity; dealing with uncertainty; risks versus benefits; and the importance of public participation.

Following will be case studies and a practical group exercise. "No institution in modern American society may be facing the kinds of complex infrastructure questions that the 'news business' faces as part of the information age revolution," Ward observed. "How the media tell the stories of environmental risks—in ways citizens can both understand and act on responsibly—will be crucial in shaping practical and effective solutions today for tomorrow's local and global environmental problems."

"This workshop," Ward said, "is designed to provide its audience useable information to help them better meet their own needs while also helping the media meet their critical societal responsibilities."

Note: Other workshops being held Sunday include "Radiation Risk Assessment at Radioactively Contaminated Superfund Sites," 8 a.m.–noon; "Advances in the Quantitative Analysis of Variability and Uncertainty in Exposure in Risk Assessment," 8 a.m.–5 p.m.; "Microbial Risks from Food: Quantification and Characterization," 8 a.m.–5 p.m.; "Lessons Learned from the EPA/AIHC Risk Assessment Demonstration Project," 8 a.m.–noon; and "Beyond Point Estimates: Risk Assessment Using Interval, Fuzzy and Probabilistic Arithmetic," 8 a.m.–5 p.m.

News and Announcements

"Risk of Extreme and Rare Events" Forum Notes Available

The 300 pages of notes and copies of the overheads from the SRA Forum "Risk of Extreme and Rare Events" are available for $150. For ordering information contact the Secretariat, 1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101; phone: 703-790-1745; fax: 703-790-2672; e-mail: <sra@BurkInc.com>.

First World Congress on Risk Analysis

The planning for the SRA Year 2000 First World Congress is now underway. The event will consist of a conference as well as the exploration and discussion of risk analysis and risk management themes. Members of the Planning Committee are current SRA President Rae Zimmerman, President-Elect Yacov Haimes, Past President John Graham, President-Elect Designate, a representative from SRA-Europe, and a representative from SRA-Japan. The Congress will be located in London, and Ragnar Löfstedt will be the SRA-Secretariat's contact in England for local arrangements.

To begin the effort, Councilor Robin Cantor has developed a session for the 1997 SRA Annual Meeting to be held on Monday, 8 December, 10:30 a.m.–noon. The session will explore the range of views about why the friction between risk assessment and policymaking continues to resist resolution within the policy community. Cantor is also in charge of obtaining some preliminary funding for conference planning.

Integrated Risk System on the Web

EPA's Integrated Risk Information System (IRIS) is available on the World Wide Web at <www.epa.gov/iris>.

NCRP Announces Plans for a Workshop to Compare Methods for Estimating Radiological and Chemical Risks

The National Council on Radiation Protection and Measurements (NCRP) Board of Directors has authorized the symposium "Comparison of Methods for Estimating Radiological and Chemical Risks." John Till, chair of NCRP's Scientific Committee 64 (SC64), says that it is expected that DOE will sponsor the symposium but that no date has been picked. SC64, NCRP's committee on environmental issues, proposed the symposium to the Board and hopes that the one or one and one-half day symposium will be held next summer.

The objective of this project is to sponsor and conduct a symposium to compare and evaluate methods for estimating radiological and chemical health risks. The scope will include all methods for evaluating transport and fate of contaminants and for determining risk once exposures are determined. Topics will be divided into the basic areas of release mechanisms, transport, exposure assessment, dosimetry, and conversion of dose to risk. The symposium format will be coordinated between

NCRP and the funding agency; however, one approach to be considered is to have separate sessions dealing with the various areas of interest. It may be necessary to hold a series of symposiums (because of the diverse nature of the subjects that would be included) each focusing on a specific topic, with similar symposia formats. Invited speakers would be asked to review state-of-the-art transport and dosimetry methods and to point out where differences and similarities lie in analyzing chemicals and radionuclides.

The development and application of methods to estimate the transport and fate of radioactive materials and chemicals have essentially proceeded along independent paths over the past several decades. Risk analysis for radionuclides is more advanced in many respects because of its long developmental history, primarily due to the early interest in the nuclear weapons program and peacetime uses of atomic energy. However, risk assessment for chemicals has evolved rapidly because of intense and widespread use of chemicals for a variety of purposes, the need to remediate chemically contaminated areas, and the public and government agencies' concern about the safety of their use.

More and more in risk assessment today, both radionuclides and chemicals as mixtures are found in the contaminant spectrum being addressed. Although many techniques applied to estimate risk are adaptable to either chemicals or radionuclides, many are not, and in some situations quite different techniques and assumptions are being applied. Further complicating analysis of mixtures of radionuclides and chemicals are the risk factors themselves (also known as slope factors), which have been derived using very different information bases and assumptions. The state-of-the-art of risk assessment for chemicals and radionuclides is well documented and an evaluation of the common and different approaches being applied is needed. Such an examination of differences and similarities would help identify strengths and weaknesses and eventually lead to a better merging of the two fields of risk assessment. In the end, the use of consistent methods for analysis of both chemicals and radionuclides would be advantageous for science, government, and the public.

NCRP's plan is that this symposium will provide a more complete understanding of the similarities and differences in methods used in risk assessment. From the viewpoints of both equity and efficiency, it may prove to be desirable to have the methods applied to radiological and chemical risk to be more consistent. However, there may be other considerations that make consistency impractical in particular contexts.

NCRP intends that the symposium explore these issues without a predetermined objective for whether or how this methodology could be made more consistent.

SC64 feels that the proposed symposium would be beneficial to many government, public, and scientific organizations.

Russian Journal Articles About Chernobyl Studies Available from Harvard

Four important issues of the Russian Journal, *Bulletin of the National Radiation and Epidemiological Registry*, have been translated and are available from Harvard University. The issues, published by the Medical Radiological Research Center at Obninsk, Russia, summarize the studies of the approximately 400,000 emergency workers involved with the clean up following the Chernobyl nuclear reactor accident.

A number of the papers address the question of the actual number of people suffering from radiation-induced diseases from the doses which these workers absorbed. From these data a risk coefficient is calculated for leukemias and thyroid cancers. The average individual dose to the emergency workers was about 110 mGy (11 rad). This is smaller than the average dose in the cohort of Hiroshima and Nagasaki survivors. In addition, the dose rate was much smaller since the exposure time was from several months to a year or more, compared to the exposure time of seconds at Hiroshima and Nagasaki. This difference in exposure conditions "makes these studies especially interesting" according to Richard Wilson, who translated these pertinent issues of the Journal. The issues are available from Wilson, Department of Physics, Harvard University, Cambridge, MA 02138. Wilson can be contacted by e-mail at <wilson@huhepl.harvard.edu>. A contribution of $15 is asked for each issue to cover postage and translation costs.

Nominees for SRA Officer Elections

New officers and councilors for the Society for Risk Analysis will be announced at the 1997 Annual Meeting in Washington, D.C. The nominees for election are:

President-Elect (one-year term):
Robin Cantor, Managing Economist with the Law & Economics Consulting Group, vs. **Gail Charnley**, Executive Director of the Commission on Risk Assessment and Risk Management.

Secretary (two-year term):
Tim McDaniels, Director of the Eco-Risk Research Unit and Associate Professor in the Institute of Resources and Environment and the School of Planning, University of British Columbia, vs. **Harlee Strauss**, President of H. Strauss Associates, Inc.

Councilor (three positions, each with a three-year term):
Alison Cullen, Assistant Professor, University of Washington's Graduate School of Public Affairs, vs. **Bill Freudenburg**, Professor of Rural Sociology and Environmental Studies, University of Wisconsin-Madison.

Michael R. Greenberg, Professor, Department of Urban Studies and Community Health, and Co-Director, Graduate Program in Public Health, University of Medicine and Dentistry of NJ-Robert Wood Johnson Medical School, Rutgers University, vs. **Dale Hattis**, Research Associate Professor, Center for Technology, Environment, and Development, Marsh Institute, Clark University.

Joe Minarick, Senior Staff Member, Science Applications International Corporation (SAIC), vs. **Dennis Paustenbach**, Consulting Toxicologist, McLaren/Hart Environmental Engineering.

Member News

B. John Garrick

Dr. B. John Garrick has been elected Chairman of the Nuclear Regulatory Commission's (NRC) Advisory Committee on Nuclear Waste (ACNW).

The ACNW is a part-time advisory group which was established by the NRC in 1988 to provide independent technical review and advice on the disposal of nuclear waste, including all aspects of nuclear waste disposal facilities, as directed by the Commission. This advice covers activities related to licensing, operation, and closure of high-level and low-level radioactive waste disposal facilities and associated rulemakings, regulatory guides, and NRC staff technical positions. The ACNW also reviews performance assessment evaluations of waste disposal facilities.

Garrick was appointed to the ACNW on 6 March 1994. He was born in Eureka, Utah. He received his B.S. in physics from Brigham Young University in 1951 and received his M.S. in engineering and Ph.D. in engineering and applied science from the University of California in 1962 and 1968, respectively. In 1954 he was selected via national competition to attend the prestigious United States Atomic Energy Commission's Oak Ridge School of Reactors to do graduate work in nuclear science and technology.

Garrick retired as President and Chief Executive Officer of PLG, Inc., an international engineering, applied science, and management consulting firm. He continues as a member of the Board of Directors and advisor to the firm. A physicist and engineer, he has pioneered risk assessment methods in many fields including nuclear energy, space and defense, and chemical, petroleum, and transportation.

Among Garrick's honors are: election to the National Academy of Engineering in 1993; President of the SRA 1989–90; recipient of the SRA's most prestigious award, the Distinguished Achievement Award, in 1994; and currently Vice Chairman of the National Research Council's Board on Radioactive Waste Management. He is a Fellow of three professional societies: the American Nuclear Society, the Institute for the Advancement of Engineering, and the SRA.

Carol Gevecker Graves

EA Engineering, Science, and Technology, Inc., (NASDAQ: EACO) of Baltimore, Maryland, recently announced the appointment of Dr. Carol Gevecker Graves to the position of Washington, D.C., Branch Manager.

Graves, who has been with EA for 14 years, is a biostatician with experience in human health, environmental, and epidemiological applications. Working from EA's Washington, D.C., office in Silver Spring, Maryland, she will manage 15 engineers, scientists, and technical personnel who provide services in energy technologies and risk sciences and management. The Washington, D.C., branch provides these services for government and private industry clients including the Department of Energy, the American Petroleum Institute, and the U.S. Postal Service.

"I'm very excited about EA's Washington, D.C., Branch. We have some unique capabilities in the environmental consulting business, and together with EA's Baltimore Branch, we offer a full range of environmental services to our clients," said Graves.

"The branch hopes to increase our business with trade associations and surrounding municipalities. EA is a well-kept secret, and I will be working to make us better known throughout the Washington, D.C., area."

Graves, who most recently served as a senior scientist at EA, is a member of the SRA, the American Statistical Association, the International Society of Exposure Analysis, and the American Association of University Women.

An author of numerous publications and presentations, Graves received her Ph.D. in biostatistics from the Johns Hopkins University in 1975, her Master's degree in liberal arts from the Johns Hopkins University in 1969, and her Bachelor's degree in mathematics and English from Drury College in 1962.

At her home in Silver Spring, Graves lives with her husband, Willard. She has two grown children and two grandchildren. In her spare time she enjoys sewing and antiques.

Rao Kolluru

SRA Metro Chapter President Dr. Rao Kolluru has written a new book, *In Quest of the Infinite*, to be published Autumn 1997. Following a diversified career in environment, health, business, and education, spanning more than two decades, Kolluru has been exploring the unity of Science and Self. He has journeyed from the canyons of New York to the peaks of the Himalayas in quest of the infinite.

Among Kolluru's many publications are two handbooks that he recently edited: *Environmental Strategies Handbook* and *Risk Assessment and Management Handbook*, both published by McGraw-Hill. These handbooks are being used as texts and references in interdisciplinary programs around the world and are being translated into Chinese and Japanese. Kolluru has lectured widely from Princeton to Peking on a variety of subjects.

In this book, bridging the physical and the metaphysical, Kolluru offers practical guidance for everything from business to wellness, separating science from nonsense with parables and unnerving humor. With the precision of a scientist and the understanding of a philosopher, he lays out guideposts for the eternal human quest.

Paul Lioy

SRA member Dr. Paul Lioy is co-chair on the Conference Committee for the Seventh Annual Meeting of the International Society of Exposure Analysis (ISEA) to be held 2–5 November 1997 at the Sheraton Imperial Hotel, Research Triangle Park, North Carolina. The conference is co-sponsored by the Air & Waste Management Association and the U.S. Environmental Protection Agency.

This year's ISEA meeting has been planned to facilitate cross-disciplinary interactions and stimulate thinking and discussion of controversial and challenging topics to exposure scientists and engineers. "With the increasing international focus on risk assessment, the need for more advanced exposure assessments has become obvious and is driving the next generation of exposure research," according to Lioy. "We therefore have invited leaders on several aspects of exposure to participate in a plenary panel to provide their expert predictions of future research directions and engage the audience in the discussion," he continued.

The meeting sessions have been constructed to stimulate discussions among the different disciplinary experts on such topics as methods, measurements, models, and assessment of dietary exposures or particulate matter exposures.

For additional information on the meeting contact:

ADRIENNE CAROLLA
AIR & WASTE MANAGEMENT ASSOCIATION
1 GATEWAY CENTER 3RD FLOOR
PITTSBURGH PA 15222
Phone: 412-232-3444
Fax: 412-232-3450

G. P. Patil

Dr. G. P. Patil, Chair of the Awards Committee, International Association for Ecology, has announced that nominations are invited for the Distinguished Statistical Ecologist Awards. Patil is a charter member of SRA.

Patil was also was the first recipient of the Distinguished Statistical Ecologist Award in 1986, the year that the Association initiated the Awards in conjunction with the Syracuse Congress Plenary Session on Statistical Ecology by the Statistical Ecology Working Group of the International Association for Ecology (INTECOL).

Other Awards Committee members include Pierre Legendre (Canada), B. F. J. Manly (New Zealand), R. V. O'Neill (United States), Orazio Rossi (Italy), and Sir Richard Southwood (United Kingdom).

Nominations for the Awards should include the nomination letter, a CV of the nominee, and supporting letters. Six copies are requested on or before 31 January 1998. Materials should be sent to:

PROFESSOR G P PATIL DIRECTOR
CENTER FOR STATISTICAL ECOLOGY
AND ENVIRONMENTAL STATISTICS
DEPARTMENT OF STATISTICS
PENNSYLVANIA STATE UNIVERSITY
421 THOMAS BUILDING
UNIVERSITY PARK PA 16802 USA.

Edward J. Calabrese

Edward J. Calabrese, Ph.D., Professor of Toxicology at the University of Massachusetts School of Public Health, has recently completed the development of an extensive data base on chemical hormesis. Current work is ongoing to investigate the implications of this data base to the risk assessment process for both carcinogens and non-carcinogens. This work is part of BELLE (biological effects of low-level exposure) which produces the *BELLE Newsletter* that is distributed to SRA members three times per year. Those interested in obtaining past copies of the *BELLE Newsletter* should visit the BELLE web site at www.belleonline.com or call BELLE (413-545-3164).

Calabrese also directs, along with Dr. Paul Kostecki, the 12th Annual Soil Contamination Conference (21–24 October 1997 at the University of Massachusetts, Amherst) which attracts up to 800 scientists per year. In addition, Calabrese is the Editor-in-Chief of the bi-monthly journal *Human and Ecological Risk Assessment* (*HERA*). The SRA has recently entered into an agreement with CRC/Lewis Publishers to make *HERA* available to the SRA membership at a reduced subscription rate.

Dr. Vlasta Molak

Dr. Vlasta Molak is the editor and one of the authors of the book *Fundamentals of Risk Analysis and Risk Management*, published by CRC Press. Molak, the President of GAIA Unlimited, Inc., is a former Secretary and International Coordinator, SRA.

This book bridges the gap between the many different disciplines used in applications of risk analysis to real world problems. Authors include many prominent members of the SRA. Contents and authors of the book chapters are as follows:

"Foreword," Ohio State Senator D. Kucinich
"Introduction and Overview," V. Molak
Theoretical Background of Risk Analysis
"Toxic Chemicals, Noncancer Risk Analysis, and U.S. Institutional Approaches to Risk Analysis," V. Molak
"Epidemiology and Cancer Risk Assessment," H. Gibb
"Uncertainty and Variability in Risk Analysis," R. Wilson and A. Shlyakhter
"Monte Carlo Risk Analysis Modeling," D. Vose
"An Overview of Probabilistic Risk Analysis for Complex Engineered Systems," V. Bier
"Ecological Risk Analysis," R. Lackey
"The Basic Economics of Risk Analysis," J. Swaney
Applications of Risk Analysis
"Assessment of Residential Exposure to Chemicals," G. Whitmyre, J. Driver, and P. J. Hakkinen
"Pesticide Regulation and Human Health: The Role of Risk Assessment," J. Driver and G. Whitmyre
"Ionizing Radiation Risk Assessment," J. Alvarez
"Use of Risk Analysis in Pollution Prevention," V. Molak
"Integrated Risk Analysis of Global Climate Change," A. Shlyakhter and R. Wilson
"Computer Software Programs, Databases, and the Use of the Internet, World Wide Web, and Other On-Line Systems," B. Hakkinen
Risk Perception, Law, Politics, and Risk Communication
"Risk Perception and Trust," P. Slovic
"The Insurability of Risks," H. Kunreuther and P. Freeman
"Setting Environmental Priorities Based on Risk," P. Deisler
"Comparative Risk Analysis: A Panacea or Risky Business?" V. Molak
"Environmental Justice," R. Zimmerman
"Law and Risk Analysis in the United States," P. B. Hutt
"Science, Regulation, and Toxic Risk Assessment," H. Latin
Risk Management
"Risk Management of the Nuclear Power Industry," B. J. Garrick
"Seismic Risk and Management in California," W. Dean
"Management of Sustainable Natural Disasters in Developing Countries," T. Lustig
"Risk Analysis, International Trade, and Animal Health," S. C. MacDiarmid
"Incorporating Tribal Cultural Interests and Treaty-Reserved Rights in Risk Management," B. L. Harper
"Global Use of Risk Analysis for Sustainable Development," V. Molak
"Conclusion," V. Molak
"Glossary"
"Index"
"Answers to Questions"

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Deadline for RISK *newsletter* submissions

Information to be included in the Fourth Quarter 1997 SRA RISK *newsletter*, to be mailed at the beginning of January, should be sent to the Editor at the address above no later than 20 November.

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