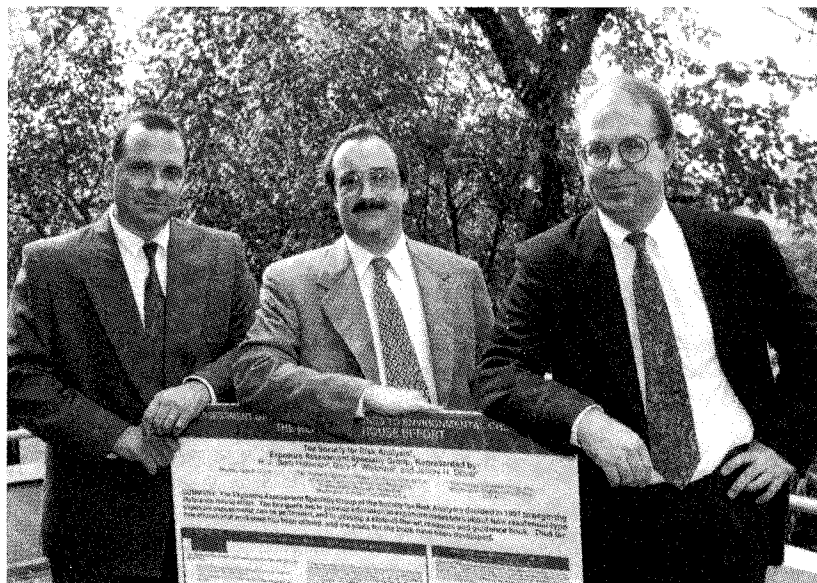


RISK *newsletter*

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Jeffrey Driver, Gary Whitmyre, and Bert Hakkinen (from left to right) laid the groundwork for the residential exposure assessment project.

SRA Launches Reference Book on Residential Exposure Assessment

The world's first textbook and comprehensive reference document on residential exposure assessment will be published in 1995 following a joint effort between the Society for Risk Analysis, the U.S. Environmental Protection Agency, and the International Society of Exposure Analysis.

The project's goal is to create a reference document to guide practitioners, researchers, and graduate-level students.

"There currently is no textbook that can be shared with students, and there is no reference manual for practitioners who do residential exposure assessments," said Jeffrey Driver, who is the assistant director of the toxicology division of Technology Sciences Group Inc. in Washington, D.C. He also teaches at George Mason University and George Washington University Medical Center.

Driver and fellow SRA members Bert Hakkinen and Gary Whitmyre laid the groundwork for the project.

"This book will be the first of its kind in providing state-of-the-art methodologies and a peer-reviewed data source for residential exposure assessors," said Whitmyre, who is the director of human exposure and risk assessment at Technology Sciences Group Inc. *(Continued on page 22.)*

1993 Annual Meeting Convenes in Savannah

Set in the historic southern city of Savannah, Georgia, the 1993 Annual Meeting of the Society for Risk Analysis will be held from Sunday, December 5, through Wednesday, December 8.

The meeting will feature more than 300 papers in seven concurrent platform sessions, roundtables, symposia, and poster displays; six workshops designed to hone the skills of risk professionals; and invited speeches by renowned experts.

Sessions Expanded

This year the Society is presenting seven platform sessions, up from last year's six tracks. The tracks, which run Monday through Wednesday, are as follows:

- Dose Response,
- Ecological Risk Assessment,
- Exposure Assessment,
- Engineering Systems,
- Regulatory Policy and Decision Making,
- Risk Characterization, and
- Risk Communication.

Posters will be on display from 8:30 a.m. Monday to 3:30 p.m. Wednesday, with each presenter on hand at his or her poster to answer questions during coffee breaks in the mornings and afternoons. Posters will be grouped by the same topics as the platform sessions.

Plenary Speaker

During the meeting's plenary session at 8:30 a.m. Monday, December 6, the Society will honor its newly named fellows and present the Outstanding Service Award to Peter Barton Hutt and the Distinguished Achievement Award to Richard Wilson (see stories

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Visitors Charmed by Savannah

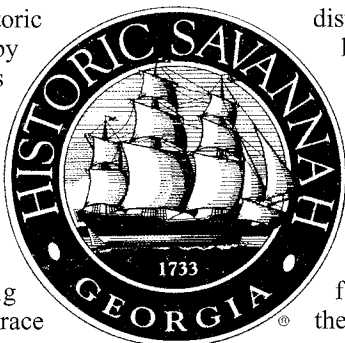
Savannah, Georgia, which was hailed "the most beautiful city in North America" by the Paris-based *LeMonde* publication, is the site of the 1993 SRA Annual Meeting.

Also cited as one of the "10 best walking cities" in the United States by *Walking Magazine*, Savannah delighted the Society for Risk Analysis' Council members when they met there this autumn.

"The architectural beauty, the quaint shops, and the unusual restaurants of Savannah were enchanting," said SRA President Jim Wilson. He especially recommends the evening meals at the Olde Pink House at 23 Abercorn Street and several seafood bars along the city's old waterfront.

Designed by Gen. James Oglethorpe in the 1730s, the city's historic broad streets lined by Spanish moss and its spacious public

Savannah's front Plaza, where the Meeting hotel is located, the Savannah River. Buildings featuring gingerbread trim and gothic architecture grace



the district is known for its live oaks draped with more than two dozen squares.

nine-block River-the SRA Annual Meeting, stretches along Victorian houses with other 19th century federal, regency, and the area.

Special events ongoing during the 1993 SRA Annual Meeting in Savannah include the following:

- Saturday, December 4: The Christmas 1864 event at Old Fort Jackson is a dramatic re-enactment of the final hours when Confederate forces evacuated Savannah before Gen. William T. Sherman's occupation of the city. Performances will be given every 30 minutes from 6 to 8 p.m., and attendance is free. Call (912) 232-3945 for information.

- Saturday, December 4, and Sunday, December 5: Self-guided walking tours of 17 historic inns decorated for Christmas run from 1 p.m. to 4 p.m. Tickets, which are \$15 per person (proceeds go to the Savannah Humane Society), can be purchased at the Ballstone Inn on 14 East Oglethorpe Avenue. Call (912) 236-1484 for information.

- Saturday, December 4, and Sunday, December 5: The annual Christmas on the River festival includes a boat parade, a Christmas concert, puppet shows, an arts and crafts festival, and the lighting of River Street at dusk. Attendance is free. Hours are from 11 a.m. to 5 p.m.

- Daily during December: Two-hour guided Christmas tours of Savannah's historic churches are given at 10 a.m. and 2 p.m. Monday through Saturday, followed by refreshments at a historic inn. Tickets are \$12 a person, and reservations are required. Call (912) 232-6866 for information.

Annual Meeting

(Continued from page 1.)

on pages 4 and 5). The winners of the student paper competition will also be recognized (see page 5).

The speaker at the plenary session will be David J. Brusick, the scientific director for Hazleton Washington Inc.

in Vienna, Virginia, which is a private toxicology laboratory owned by Corning Inc.

Brusick, who chairs the International Commission for Protection Against Environmental Mutagens and Carcinogens, will share his insights on "Genetic Risk Assessment: First Model Applicable to Global Regulations."



David J. Brusick

His research activities have focused on the areas of method development, validation, and data assessment in genetic toxicology. Brusick received his Ph.D. in genetics from Illinois State University in 1970 and held a postdoctoral research position with the U.S. Food and Drug Administration.

Workshops

As part of its effort to promote risk analysis education at the annual meeting, the Society is sponsoring six workshops from 9 a.m. to 5 p.m. on Sunday, December 5:

- Managing the Conflict in Risk Communication,
- Monte Carlo Modeling,
- Residential Exposure,
- Fundamentals of Risk Analysis,
- Radiation Risk Assessment, and
- A Primer to the New Trends in Risk Assessment: Infants, Children, and Modeling Uncertainty.

For more information on the workshops, see the story on page 6.

Specialty Groups

The **Exposure Assessment Specialty Group**, which will meet at 7:30 p.m. Tuesday, December 7, has planned several events for the annual meeting.

On December 6, the group will conduct an all-day symposium on "Monte Carlo and Probabilistic Approaches to Exposure Assessment and Risk Characterization." Major topics to be discussed include physiologically based pharmacokinetic models, degree

and source of conservatism in stochastic models, uncertainty of dose-response assessments, the effect of uncertainty on decision making, probability density functions for use in probabilistic health risk assessments, human interindividual variability, computation of uncertainty in performance assessments for complex systems, Bayesian statistical approach in dose-response assessments, approach for determining maximum sustainable ventilation rate in exposure assessments, probabilistic exposure models in ecological risk assessments, and case studies. The papers presented at the symposium are being considered for publication in a special issue of *Risk Analysis* on probabilistic methods in public health risk assessments.

The group also has organized two workshops, six sessions, and 15 posters for the annual meeting. In addition, it will hold a panel discussion on Wednesday, December 8, on the residential exposure assessment handbook, which the group began organizing at the 1991 SRA Annual Meeting under the leadership of Bert Hakkinen of The Procter & Gamble Company (see story, page 1).

Currently, the group is looking for candidates to fill the position of chair-elect/secretary for 1993-94. Nominations will close on November 15, and winners will be announced at the annual meeting. Anyone who is interested in running should contact Paul Price of ChemRisk Inc., telephone (207) 774-0012, fax (207) 774-8263; or Robert Fares of Versar Inc., telephone (703) 642-6863, fax (703) 642-6954.

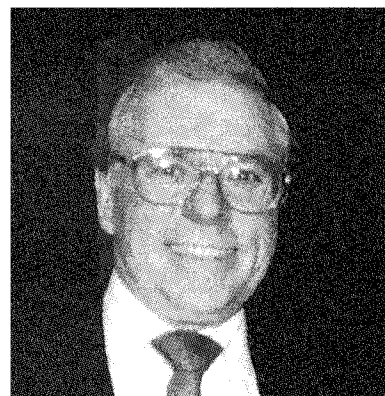
The Risk Communication Specialty Group, which will meet at 7:30 p.m. Tuesday, December 7, has planned 10 sessions for the annual meeting.

Lynn Luderer of the U.S. Environmental Protection Agency will chair an EPA roundtable session, which will present risk communication research that has been funded by EPA. A two-part symposium on electric and magnetic fields is scheduled in two sessions chaired by Gordon Hester of Carnegie-Mellon University: the first is a risk communication session and the second an engineering systems/regulatory

(Continued on page 4.)

Tardiff to Lead SRA in 1994

Creating an ongoing partnership between SRA and the U.S. Environmental Protection Agency will be one of Robert Tardiff's main goals when he becomes president of the Society for Risk Analysis in December.



Robert Tardiff

"One project we hope to accomplish in 1994 is getting a long-term financial support agreement with EPA," said Tardiff. "Our hope is that the cooperative agreement will cover three years and will be written so that as specific topics come up, we can go to EPA and get funding for projects with far less contract negotiations."

Tardiff, a founding member of the Society for Risk Analysis, is vice president for health sciences at EA Engineering, Science, & Technology Inc. in Silver Spring, Maryland. Formerly he was chief of the EPA's Toxicological Assessment Branch and executive director of the National Academy of Sciences/National Research Council Board on Toxicology and Environmental Health Hazards. He holds a Ph.D. in pharmacology and toxicology from the University of Chicago.

As an example of how a long-term agreement could have benefited the Society this year, Tardiff pointed to SRA projects that the EPA is interested in — a handbook on residential exposure assessment and a workshop on risk assessments of the diets of children.

"The residential exposure project was being negotiated when the workshop on pesticides and children came up," Tardiff explained. "We had to go back and begin negotiating all over again for an agreement for that particular workshop. That doubled the work, whereas if we had had a long-term agreement in place, we could have undertaken the projects more quickly."

Benefits of the partnership would include a continuing dialogue between SRA and EPA scientists and a growing recognition of SRA's capabilities, he said. "EPA and others are increasingly recognizing SRA as an objective, credible organization that can deal with global, highly publicized risk analysis projects."

The president-elect's other goals include continuing the work of President Jim Wilson and Past President Warner North in restructuring the Society to reflect its international membership. "We must still work arduously at consolidating the sections. A variety of models have been proposed, but the exact form that the Society will take hasn't been decided. The final outcome will depend on discussions with all sections."

Tardiff also hopes to continue promoting the involvement of students. "This year we are giving awards for the best student papers at the annual meeting, and we plan to explore more ways to expand our student involvement program."

Tardiff will succeed outgoing president Wilson at the end of the business meeting on December 8 at the 1993 SRA Annual Meeting in Savannah. Wilson, who is the regulatory issues director of the Environmental, Safety, and Health Staff of the Monsanto Co. in St. Louis, Missouri, will remain on the SRA Council for another year as past president.

Peter Barton Hutt Receives Outstanding Service Award

Peter Barton Hutt is the 1993 recipient of the SRA Outstanding Service Award in honor of more than a decade of extraordinary contributions to the Society for Risk Analysis.

An SRA charter member, Hutt has performed many services, including serving as legal counsel to the Society from 1992 to the present — a position he has held informally since 1982. He served twice on the SRA Council, in 1985-88 and in 1989-92.

"Peter Hutt is a superb lawyer who has given SRA lots of legal advice of a structural nature for free," said former SRA president Chris Whipple. "He basically rewrote the constitution and bylaws by himself back in the early days, and he helped standardize charters for chapters in different states."

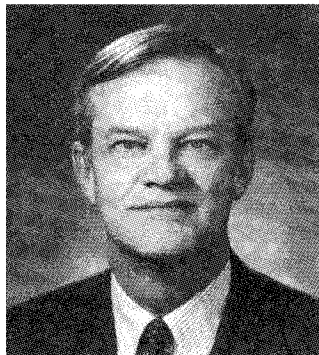
Currently a lawyer with Covington & Burling in Washington, D.C., Hutt was chief counsel for the U.S. Food and Drug Administration for four years in the early 1970s. Considered a leading authority on U.S. food and drug laws, he lectures on food and drug topics at Harvard Law School, the University of Virginia's School of Law, and Tufts University. He also has testified before Congress on numerous occasions as an expert witness.

The *Washingtonian* magazine named Hutt as one of Washington's 50 best lawyers in 1992 and earlier named him as one of the 100 most influential people in the nation's capital.

Hutt co-authored the book *Dealing with Drug Abuse* with Judge Patricia M. Wald in 1972 and the book *Food and Drug Law: Cases and Materials* with Richard A. Merrill in 1980.

His past achievements include receiving the U.S. Food and Drug Administration's highest honor, the Award of Merit, in both 1973 and 1975 and the U.S. Department of Health, Education, and Welfare's highest award, the Distinguished Service Award, in 1974. Other honors include the Harold Macy Food Science and Technology Award from the Minnesota Section of the Institute of Food Technologists in 1992, the Outstanding Leadership Award from the Alcohol and Drug Problems Association of North America in 1979, the Underwood-Prescott Memorial Award from the Massachusetts Institute of Technology in 1977, and the Arthur S. Flemming Award as one of the 10 outstanding young men and women in the federal service in 1974.

Hutt received his bachelor's degree from Yale University in 1956 and his law degrees from Harvard University in 1959 and New York University in 1960.



Peter Barton Hutt

Annual Meeting

(Continued from page 3.)

policy/decision session. The topics of the group's eight remaining sessions are evaluating communication programs, training programs in risk com-

munication, risk perception as a basis for communication, public involvement, factors in risk communication and management, the structure of risk perception, and the media and perceived risk. In addition, the group will present five posters.

The Engineering Specialty Group, the Ecological Risk Specialty Group, and the Global Risk Analysis Specialty Group are scheduled to meet at 7:30 p.m. Tuesday, December 7.

Risk Management Meeting

All interested persons are invited to a special meeting at 5:30 p.m. Monday to discuss the possibility of creating a Risk Management Specialty Group. The meeting's organizer is SRA member Branden Johnson, who is a researcher in the Division of Science and Research of the New Jersey Department of Environmental Protection and Energy, telephone (609) 633-2324.

Business Meeting

The Society's business meeting will be held at noon on Tuesday, December 7, during the luncheon. At the business meeting, the results of the recent SRA elections will be announced.

Council Meetings

The 1992-93 SRA Council will hold its final meeting at the hotel at 1 p.m. Sunday, December 5.

The 1993-94 Council will convene at 7 p.m. Tuesday, December 7.

Special Breakfasts

The Society will host three special breakfasts on Tuesday, December 7, at the hotel before platform sessions begin. The breakfasts, which will be held separately, are for all new SRA members, for all international members, and for chapter representatives.

RiskWare '93

RiskWare '93, the traditional annual meeting computer software exhibit, will be on display from 7 to 9 p.m. on Sunday, December 5; 8:30 a.m. to 6:30 p.m. on Monday, December 6; and 8:30 a.m. to 3 p.m. on Tuesday, December 7.

Book Exhibit

The annual book exhibit, which is still accepting exhibitors, will be open throughout the meeting. Those interested in exhibiting a book must register with Lori Strong of the SRA Secretariat's office, telephone (703) 790-1745.

(Continued on page 23.)

Six Student Papers Receive Awards

The 1993 Annual Meeting in Savannah is the first time that the Society for Risk Analysis has offered cash awards for presentations by students at an SRA annual meeting. Six students have been selected to receive \$500 awards on the basis of their papers' scientific rigor, creativity, and advancement of the science of risk analysis. The award recipients and their affiliations, with the titles of their papers and the names of contributing authors, are:

- **W. Leonard Balthis**, Department of Biometry and Epidemiology, the Medical University of South Carolina, and National Marine Fisheries Service, Southeast Fisheries Science Center, Charleston Laboratory, "A New Method for the Quantification and Characterization of Contaminant Levels in Fish," with E. O. Voit and G. M. Meaburn;

- **Srinivas Emani**, Center for Technology, Environment, and Development (CENTED), Worcester, Massachusetts, "Risk Signals in Newspaper Coverage of Global Climate Change: A Cross-National Study," with J. X. Kasperson, R. E. Kasperson, A. Kluge, B. J. Perkins, S. J. Ratick, and O. Renn;

- **Kevin M. Kennedy**, Energy and Resources Group, University of California, Berkeley, "Risk Communication and Facility Permitting: Responding to Public Concerns";

- **Robert C. Lee**, Department of Environmental Health, University of Washington, Seattle, "Prediction of Exposures to Arsenic Contaminated Residential Soil Using Monte Carlo Simulation: A Comparison with Biomonitoring Data," with John C. Kissel;

- **Michael K. Pisarcik**, Department of Biometry and Epidemiology, the Medical University of South Carolina, "The Influence of Printed Media on Perceived Risk," with Daniel T. Lackland; and

Distinguished Achievement Award Goes to Richard Wilson

Richard Wilson, a renowned physicist who has lectured on risk analysis around the world, is the 1993 recipient of the SRA Distinguished Achievement Award.

Wilson has been a professor for more than 30 years at Harvard University, where he is the Mallinckrodt Professor of Physics and the director of the Regional Center for the Study of Global Environmental Change.

"Dick has been willing to dive into more new areas than practically anyone else on the risk landscape. He isn't afraid to tackle any issue," said former SRA president Chris Whipple, who is a member of the SRA Awards Committee. "He is an inventive, thoughtful physicist of high standing in both the engineering-nuclear safety area and the biological-toxicological area."

Wilson has given lectures on risk in countries such as Russia, India, and Kuwait. His special projects include helping produce a film on the Chernobyl nuclear accident for public television and co-writing the book *Risk-Benefit Analysis* with E.A.C. Crouch in 1982.

In 1990, the American Physical Society lauded Wilson with a Forum Award for his pioneering use of comparative risk analysis, his work on reactor safety, and his estimation of hazards posed by environmental pollution.

A founding member of SRA, Wilson has served on both the SRA Council and the editorial board of *Risk Analysis*.

In addition to his position at Harvard, Wilson is director of the Sakharov Foundation in New York, chairman of the Sakharov College of Radioecology's International Advisory Committee in Minsk, chairman of the Massachusetts General Hospital's Visiting Committee on Radiation Medicine, and a member of the Conseil Scientifique NBC in Nice, France. He has held summer and visiting positions at Stanford University, the University of Grenoble in France, and the University of Paris.

His past work includes testifying before numerous international and U.S. government committees, holding the National Science Foundation Lecturer position in Pakistan in 1982, and co-directing the International Schools on Energetics in Erice, Italy, during 1974-80.

He has also served as a consultant to the U.S. General Accounting Office, the attorney generals of Rhode Island and Maine, the United Nations Council on Namibia, Clairol Inc., the Electric Power Research Institute, the Lawrence Livermore Laboratory, the Oak Ridge National Laboratory, and the Los Alamos National Laboratory.

Wilson received his bachelor's, master's and doctor's degrees in physics from Oxford University in Oxford, England.



Richard Wilson

- **Jason Robertson**, University of North Carolina at Chapel Hill, "Environmental Impacts from Impoundments on Benthic Macroinvertebrate Popula-

tions Due to Changes in Water Quality: A General Model for the Development and Interpretation of Aquatic Risk Analyses."

SRA Hosts Six Workshops

Registration is still open for six intensive, one-day workshops that the Society for Risk Analysis is offering at the 1993 Annual Meeting in Savannah, Georgia. The workshops, which are from 9 a.m. to 5 p.m. on Sunday, December 5, cost \$150 each. To register, contact the SRA Secretariat's office at (703) 790-1745.

Managing the Conflict in Risk Communication

This workshop will present methods useful in integrating conflicting values and interests that tend to arise in situations involving health and environmental risk. Intended for risk communication consultants, practitioners, and researchers, the workshop focuses on developing new outlooks for approaching risk communications and essential skills for managing conflict in communication. These skills can be applied to situations involving individuals, small and large groups, and groups whose outcomes appear to be mutually exclusive.

The program includes practical concepts, presentations, participant discussions, and exercises designed to give participants practice in employing new skills. Each participant will receive a packet of handouts and additional resources to augment presentations and to provide a useful reference during and after the training program.

Organizers are Judy Selig and Stephen Selig of The Calamus Group.

Monte Carlo Modeling

This workshop will focus on the use of Monte Carlo modeling in environmental risk assessment. The workshop will provide an overview of the use of Monte Carlo modeling techniques to characterize uncertainty and variation in exposure and risk estimates.

The workshop will assist participants to better understand the benefits and limitations of Monte Carlo analysis, to avoid common pitfalls in the application of this technique, to better understand the use of Monte Carlo analysis in risk management decisions, and to have a better appreciation of the regulatory and policy issues concerning the use of Monte Carlo. The workshop is intended for risk assessment professionals who are already familiar with the general principles of exposure and risk assessment and have a working knowledge of the use of spreadsheets and elementary statistics.

Organizers are Paul S. Price of the SRA Exposure Assessment Specialty Group and of ChemRisk Inc. and David E. Burmaster of Alceon Corporation.

Radiation Risk Assessment

Developed by risk assessors and health physicists involved in the cleanup of radionuclide and mixed wastes for the U.S. Department of Energy at Oak Ridge and Hanford, this workshop is intended to be an introductory or refresher course. The workshop includes an introduction to health physics and dosimetry by Bruce Napier of Pacific Northwest Laboratories, an overview of instrumentation and regulatory guidance by Nancy Lane of Westinghouse Hanford Company, and examples of radiation risk assessment methods by Erik Still of Golder & Associates. Organizers are Napier, Lane, and Still.

Residential Exposure

This introductory workshop on how to estimate residential exposure to health risks is aimed at both beginning and experi-

enced assessors. The workshop is part of an effort by the Society's Exposure Assessment Specialty Group to produce a reference book on consumer and indoor exposure tentatively called "Reference House." The session includes an overview of key technical issues involved in assessing residential exposures, a listing of resources, including software and literature, and an introduction to case studies. Organizers are SRA Exposure Assessment Specialty Group members Jeffrey Driver and Gary Whitmyre of Technology Sciences Group Inc. and Bert Hakkinen of The Procter & Gamble Co., with assistance from Paul S. Price of ChemRisk Inc. Co-chairs of the workshop are Driver and Whitmyre. (See story on page 1.)

Fundamentals of Risk Analysis

This workshop will review the body of knowledge that is essential for risk analysis applications in various fields. The instructors will explain the various specific applications of risk analysis and create a common basic language of risk analysis for all its practitioners. The organizer of the workshop hopes the workshop becomes a common knowledge denominator for all qualified risk analysts, which they can expand upon depending on their interests and fields of study. The organizer is Vlasta Molak of Gaia Unlimited Inc.

A Primer to the New Trends in Risk Assessments: Infants, Children, and Modeling Uncertainty

Inspired by the National Research Council's report on pesticides in the diets of children, this workshop will be a "new concepts and methodologies 101 course" in the evolving issues and new approaches in exposure and risk assessment.

Intended to be a survey course, it will summarize four key concepts that have been presented in current scientific literature, including the National Research Council's report titled "Pesticides in the Diets of Infants and Children," and contemporary regulatory debates on food safety. These concepts are the following: assessment of cancer risk following intermittent exposure, multiple compound exposure, population subgroup dietary profile and exposure assessment data and methodologies, and residue database criteria.

For each of the four topics, workshop presenters will offer a clear explanation, a survey of related literature and data, alternative models, case studies, and illustrations of the applications. The workshop also will include an opportunity for audience commentary and questions.

Organizers are Barbara Petersen, Christine Chaisson, and Leila Barrao of Technical Assessment Systems Inc.; and SRA Councilor David McCallum of Columbia University's Center for Risk Analysis.

Pesticides Workshop

The pesticides workshop to be sponsored by the EPA and SRA announced as an October event on the front page of the third quarter issue of RISK newsletter was postponed indefinitely.

New Reports on Pesticides Released

Two reports on pesticides have been published on the heels of a National Research Council report that called for improvements in the evaluation and regulation of pesticides in children's diets.

The first report, issued by the Council for Agricultural Science and Technology (CAST) in Ames, Iowa, and titled *Pesticides in the Diets of Infants and Children: Scientists' Review*, is a review of the NRC report.

The CAST reviewers agree on the need for additional data on the consumption of pesticide residues in children's foods, as well as improved methods for calculating risks to children; however, they question the NRC recommendation for a consumption database for children in yearly intervals through year five. The reviewers suggest a systematic and broad-based review of each of the NRC Committee recommendations.

The second report, published by U.S. General Accounting Office's Program Evaluation and Methodology Division in Washington, D.C., and titled *Pesticides: A Comparative Study of Industrialized Nations' Regulatory Systems*, summarizes information collected for the U.S. Congress on pesticides standards in countries belonging to the Organization for Economic Cooperation and Development.

Topics include test requirements for registering food-use pesticides, procedures for reviewing test data, organization of agencies that register pesticides, procedures to enforce pesticide residue standards, and efforts to harmonize pesticide standards.

The CAST report (Special Publication No. 17, \$5) may be ordered from the Council for Agricultural Science and Technology, 4420 Lincoln Way, Ames, Iowa, 50014-3447, telephone (515) 292-2125. The GAO report (GAO/PEMD-93-17, first copy free), may be obtained from the U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20884-6015, telephone (202) 512-6000, fax (301) 258-4066.

Johnston Amendment Fiercely Debated

A risk analysis amendment attached to the EPA Cabinet-elevation bill has stirred intense debate among risk professionals, Congress, and U.S. Environmental Protection Agency staff.

Called the Johnston amendment because U.S. Senator J. Bennett Johnston, D-LA, proposed it, the Senate's controversial legislation requires a three-part risk analysis to be performed on each new regulation proposed by the EPA.

The amendment would require the EPA to assess the human health or environmental risk addressed by any new EPA regulation, to conduct a comparative risk analysis of the addressed risk relative to other risks that the public faces, and to estimate the cost of implementing and complying with the new regulation.

Congress is sharply divided over the amendment, which as a result has slowed the progress of the bill that would rename the EPA as the U.S. Department of Environmental Protection and make it the 15th Cabinet agency.

The Senate attached the amendment by a 95-3 vote to its version of the bill, which passed in May. But in the U.S. House of Representatives, opposition to the amendment is strong. Opponents include U.S. Representative Henry Waxman, D-CA, who is chairman of the Health and Environment Subcommittee of the House's Energy and Commerce Committee. In addition, while President Clinton has publicly announced that he is in favor of elevating the EPA to Cabinet-level status, he opposes attaching any amendments involving regulatory or environmental policy to the bill.

Supporters of the amendment say that its risk analysis requirements are needed to ensure that EPA resources are devoted to the most important health and environmental risks, based on the best scientific data available. Opponents have said that the intent of the amendment, particularly the cost-benefit analysis requirement, is to constrain EPA from passing any new regulations.

Many risk professionals support the amendment for its focus on science-based decision making at the EPA.

"We should focus attention on the most significant risks people face, and risk analysis is one of the tools we use to set priorities," says Society for Risk Analysis Councilor David McCallum, who is at Columbia University's Center for Risk Communication. "But that is not to say that the people on the other side who are concerned about bureaucratic gridlock don't have a legitimate concern. There are ways any tool can be used to stop progress as opposed to helping progress."

SRA Councilor Donald Barnes, who is on the EPA's Science Advisory Board, supports the amendment but says that the final ranking of risks should remain in the political domain. "In concept, it is a grand idea. But do we have the methods available to do such assessments with any rigor?"

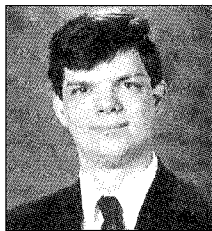
"Comparing the risk of radon in the basement of a home with the risk of radon in drinking water is something we feel comfortable with. Comparing the risk of radon in homes versus ecosystem damage is much more difficult. This would be a real challenge," Barnes said. "We as risk assessors should rise to the challenge to provide as much technical input as possible, but we should not make the decision ourselves. That should be up to the political process."

Five SRA Members Honored as Society Fellows

The SRA Awards Committee, including chairman B. John Garrick of PLG Inc., Caron Chess of the Environmental Communication Research Program, Rutgers University, Cook College, and Chris G. Whipple of the Environmental Group of ICF/Kaiser Engineers, has announced that five SRA members have been chosen to receive the award of Fellow of the Society for Risk Analysis for 1993. The Fellow award recognizes and honors members who have compiled a professional record marked by significant contributions to one or more of the disciplines served by the Society. The new SRA Fellows are listed as follows:

Louis Anthony (Tony) Cox Jr. heads Cox Associates, a Denver-based consulting business providing applied research and consulting in health, safety, and environmental risk analysis.

Since 1986 he has consulted in health-related risk assessment, risk management, and risk communication for regulatory agencies, engineering firms, petroleum and chemical companies, and industry associations. His recent areas of research include biologically based computer simulation modeling of chemically induced health effects, design and analysis of a long-term cancer bioassay experiment for isoprene, computer modeling of hazards and consequences at chemical and petroleum tank farms, reviews of safety analyses for nuclear waste handling facilities, microeconomic analysis of captive insurance companies, and critical review of transportation risks associated with liquid propane gas movement in a Canadian river. His current research interests center on reconciling statistical risk models with more complex causal models of carcinogenesis and on optimal statistical decision making in adaptively diagnosing and repairing complex reliability systems.



Cox

Before starting Cox Associates in 1986, Cox worked for six years for Arthur D. Little Inc. He holds a Ph.D. in risk analysis and an S.M. in operations research from the Massachusetts Institute of Technology. In addition, he holds an A.B. and has several years of graduate training in mathematical economics and statistics from Harvard University. He has lectured and taught graduate courses at the University of Colorado at Boulder, the Harvard University Extension School, and the Denver University Graduate School of Business and has served on the advisory board of the mathematics department at the University of Colorado at Denver since 1987. He is a reviewer for the National Science Foundation Decision, Risk, and Management Science program.

Cox has been active in SRA for 10 years, serving on the editorial board of *Risk Analysis: An International Journal*, helping to found the New England and Rocky Mountain chapters, and co-editing the SRA proceedings volume *New Risks: Issues and Management*. He is a member of several professional organizations and author and coauthor of many academic and research publications.

Stanley (Stan) Kaplan is vice president of technology development for PLG Inc. in Newport Beach, California, where he has worked for almost 18 years. He is an expert in the fields of risk, reliability, probability, decision theory, inferential logic, and the evaluation of evidence using Bayes' theorem, all of which Kaplan collectively refers to as "the science of uncertainty." He specializes in applying this science creatively to real-world business, engineering, and legal problems.

Kaplan's first rigorous training in risk thinking took place during his first job in industry, which was assembling



Kaplan

pieces of uranium to determine the critical mass. Twenty years later he began formalizing, quantifying, and mathematizing the process, beginning with construction project and nuclear plant risks and spreading to chemical, transportation, import/export, and agricultural risks, as well as many others. He has developed methods widely used in the international risk and reliability community, and his ideas and language have contributed to the steadily increasing use and trustworthiness of quantitative risk methods.

Kaplan holds an M.S. in mechanical engineering and a Ph.D. in mechanical engineering and applied mathematics from the University of Pittsburgh. He also was a senior postdoctoral fellow of the National Institutes of Health through the University of Southern California. Kaplan has been an invited speaker or lecturer for numerous conferences and short courses and is a regular instructor for a risk analysis course with the American Institute of Chemical Engineers. He has served on several national committees and boards, including the National Research Council Committee on Alternatives for Inspection of Outer Continental Shelf Operations, the National Aeronautics and Space Administration Task Force on Quantitative Risk Assessment (as an alternate member), and the editorial board of *Reliability Engineering and System Safety*. Affiliated with several professional societies, Kaplan has been a member of SRA since 1982 and is a past president of the SRA Southern California Chapter.

Daniel R. Krewski is chief of the Biostatistics Division in the Environmental Health Directorate of Health Canada in Ottawa, Ontario. He also serves as senior branch advisor for health risk assessment in the Health Protection Branch of Health Canada and is an adjunct pro-



Krewski

fessor of statistics at Carleton University.

Krewski obtained his Ph.D. in mathematical statistics from Carleton University and a master's degree in health administration at the University of Ottawa. He is currently involved in a wide variety of activities in health risk assessment and risk management.

Krewski is a fellow of the American Statistical Association and a charter member of SRA. He has contributed to over 200 publications in scientific and technical literature, is the author or editor of five books, and currently is the managing editor of the *Canadian Journal of Statistics* and an associate editor of *Regulatory Toxicology and Pharmacology*, the *Journal of Toxicology and Environmental Health*, *Risk Abstracts*, and *Risk Analysis: An International Journal*. Krewski has been a member of a number of expert panels on health risk assessment, including committees established by the Canadian Standards Association, U.S. National Academy of Sciences, International Programme on Chemical Safety, and International Life Sciences Institute. He currently serves as the Canadian representative on the Scientific Council of the International Agency for Research on Cancer.

Catherine St. Hilaire is the director of regulatory affairs for Hershey Foods Corporation in Hershey, Pennsylvania. Her expertise is in the areas of cancer research, toxicological evaluations, health risk assessments, and regulatory analysis.



St. Hilaire

St. Hilaire earned a B.S. degree in biology *magna cum laude* from West Virginia University and a Ph.D. in virology and cancer biology from Pennsylvania State University. After receiving her doctorate, she served as a Congressional Science Fellow with the American Association for the Advancement of Science, focusing on federal research efforts to identify environmental causes of human disease, and was a

postdoctoral fellow in Bruce Ame's laboratory at the University of California at Berkeley. She also served as a staff officer at the National Academy of Sciences (NAS) and worked on a number of reports, including *Risk Assessment in the Federal Government: Managing the Process*.

Following her NAS experience, St. Hilaire joined the staff of ENVIRON International Corp. for three years, after which she served as director of the ILSI Risk Science Institute, a nonprofit foundation which supports research to improve risk assessment. While at ILSI, she established a university-based research program in risk assessment, organized several conferences and workshops on improving risk assessment methods, cochaired a series of risk assessment seminars held at the Brookings Institution and cosponsored by SRA, and established a training program in risk assessment research for postdoctoral candidates. She subsequently returned to ENVIRON and was involved in projects related to public health evaluations at Superfund sites, Resource Conservation and Recovery Act facilities, and operating industrial and laboratory facilities. She has been an active participant in the implementation of California's Proposition 65 and has testified before the Proposition 65 Scientific Advisory Panel. She also is an active member of the American College of Toxicology.

An SRA member since 1985, St. Hilaire was a member of the SRA Council during 1988-91, has served on several SRA committees, and joined the Informal Women's Caucus formed at the 1992 SRA Annual Meeting. She is a nominee for the office of president-elect on the SRA ballot for 1993.

James D. Wilson, outgoing president of SRA, is the regulatory management director of risk assessment on the Environmental, Safety, and Health Staff of Monsanto Company, where he has been employed for more



Wilson

than 26 years. He has been a member of SRA since 1984, chairing the Liaison Committee in 1986-91 and serving on the Council in 1988-91. As the Society's president-elect, he served as the general chairman of the 1992 Annual Meeting in San Diego. He has also contributed several papers to *Risk Analysis: An International Journal*.

Wilson holds an A.B. *cum laude* in chemistry from Harvard College and a Ph.D. in organic chemistry from the University of Washington. He became active in the risk assessment profession via environmental chemistry and has become a nationally known expert on science policy issues in risk assessment. In 1989-90 he was given a leave of absence from Monsanto to serve as the vice president of science policy of the American Industrial Health Council. During that time he wrote a paper identifying hazard characterization as an important part of the U.S. Environmental Protection Agency's risk communication process, offering suggestions for clarifying its nature. He also organized an effort by industry scientists to describe some of the principles of science-based carcinogen hazard identification. His recent work has focused on improving the scientific basis for the health risk assessment process. He has been a frequent contributor of letters and other commentary on the application of science to health risk assessment in publications such as *Science*.

Update on Carnegie Risk Report

RISK newsletter's article in its last issue on the Carnegie Commission report *Risk and the Environment: Improving Regulatory Decision Making* generated numerous requests for the report, according to the Carnegie Corporation. The Carnegie Corporation asks that any future requests be made to Delores Locascio at the following numbers: fax (212) 838-6019 or telephone (212) 207-6336.

Should SRA Make Policy Statements?

The Decision Is in the Hands of the Membership

by Ann Fisher

During this year, members of the Ad Hoc Committee on Policy Issues have explored possible mechanisms that the Society for Risk Analysis could use to make public statements on risk analysis matters. The committee consists of SRA councilors Ann Fisher (chairman) and Rae Zimmerman and past presidents Paul Deisler and John Garrick.



Fisher

After engaging in lively debate and looking at mechanisms that other professional organizations use, the committee is offering an outline of possibilities for establishing a procedure for public statements. The next step is for members in *all* countries to send their comments on this draft by November 30 to Ann Fisher; Department of Agricultural Economics and Rural Sociology; Penn State University; 107 Armsby; University Park, PA 16802; fax (814) 865-2746; Internet e-mail ANF1@PSUVM.PSU.EDU; Bitnet e-mail ANF1@PSUVM.

This outline, and all comments received, will be a formal agenda item for discussion at the 1993 SRA Annual Meeting in Savannah, Georgia. Presumably, this discussion will yield a proposal that Society members can vote on either in a mailing or at the 1994 annual meeting.

Establishing Procedures

From time to time, SRA is approached about making a public statement regarding risk analysis policies. The policy issues committee would like each member's input on (1) whether SRA should develop policy issue statements and (2) what should be the nature of the process used to obtain membership input.

SRA leaders have discussed this issue over the years on several occasions. During Paul Deisler's presidency, for example, the SRA Council debated a specific request related to litigation. The Council concluded that any SRA statement would be seen as supporting one side or the other and would upset at least some of its members. Because of concerns that it would be perceived as lobbying, the Councilors resolved that the Council should not take public positions on behalf of the Society, even in nonlitigative areas.

Recent risk issues such as U.S. Senate and House bills requiring risk assessments, along with continuing requests for input from SRA, suggest that SRA members should

reconsider whether the details of that resolution remain appropriate.

SRA's mission can be summarized as giving professionalism and status to risk analysis as a way to illuminate the issues related to risk. The risk analysis thought process can point out the pros and cons of alternatives proposed to manage the public's risk. It also can demonstrate where risk assessment has been conducted poorly or where results have been used inappropriately.

SRA members are likely to have a variety of opinions regarding any risk issues on which SRA might consider commenting. This makes it important to set up a process for deciding the following:

- which issues to address,
- how a position is to be drafted,
- what should be the composition of the committee that drafts the position statement,
- how SRA members give input on the issue,
- how the position is to be made final, and
- how it is to be disseminated.

A simple process is easier to understand and to operate, compared with a complex process. Yet the controversial nature of taking public positions means that such actions should be approached with caution and with appropriate safeguards for the Society, its members, and its supporters.

One of SRA's strengths is that it draws professionals from many types of organizations that span various components of industry, government, and academia. Another strength is the representation among its members of many disciplines related to risk analysis. These include engineering, decision analysis, toxicology, epidemiology, statistics, psychology, sociology, economics, and journalism. Still another strength is SRA's international representation. If SRA begins making public statements about risk analysis, can it be done in a way that preserves the interaction among various disciplines and among those from different types of organizations? Can it be done in a way that accounts for the differences in needs and interests in risk policy issues across different countries or regions?

The policy issues committee sees advantages and disadvantages for having the Society take positions on risk issues and for alternative mechanisms for developing preliminary and final position statements. We think it is time for input from SRA members, and we plan to include this topic on the agenda for the 1993 business meeting in December. The following questions and possible answers are intended to stimulate thinking about whether SRA should make position statements and, if so, how they should be developed.

Q: What is the reason for SRA to engage in this new activity in the first place? What are the benefits and risks to the Society?

A: One benefit is the possibility that the existence of an SRA position on a specific risk issue will lead to improved

decision making. (This “defense of truth” tends to be an intangible benefit.) A potential benefit is that the Society might become more visible, attract more membership and—at least from some—more support. Many, especially in the physical sciences, have expressed concern that SRA has concentrated on intellectualizing risk analysis rather than on pushing risk analysis for solving real problems. Taking positions would put more emphasis on practical implications.

A risk is that some members or supporters might become alienated by the process for achieving a position if an SRA statement went forward even though some members were uncomfortable with its technical content, if it had implications for their employer or organization, or if the overall politics of the situation in which the statement might be used disturbed them.

Q: Could SRA accomplish the objective of dealing with risk policy by holding half-day sessions on selected risk issues at the annual meeting and then publishing the results in the journal *Risk Analysis*?

A: This would enable discussion of the issue and publication of commentary without putting the *imprimatur* of the Society on it. Some might associate SRA itself with the content of the publication, but a specific disclaimer would defend SRA against such loose opinions.

Q: If the membership does agree that SRA should begin this activity, is the membership willing to delegate any or all of its authority to the SRA Council—or to a new standing committee established for this purpose—to develop and then publicize positions and thus speak for the membership? Does the membership want to provide input into developing positions but allow the Council or committee to fashion these into final SRA positions and publicize them as such? Or does the membership want to retain ultimate control and only permit Council to develop positions, with or without input from membership, for debate and approval at the business meeting?

A: For comparison, the Health Physics Society has a five-member Scientific and Public Issues Committee composed of the president, president-elect, and the three most recent past presidents. This committee is responsible for preparing impartial, timely, scientific, and technical statements on issues referred by the officers, board (equivalent to the SRA Council), chapters, committees, or upon its own initiative. A quorum requires at least four members, and four affirmative votes are needed to approve any position. Any position document to be released outside their Society, even for peer review, is to be transmitted to their board at least 48 hours before being publicly released. After being finalized and transmitted to their board, the committee’s statements are to be communicated to the members via the newsletter. Their charter and rules are silent on whether or how they receive input from members.

Other professional societies use different approaches. For example, the American Society for Public Administration’s procedure relies on a policy issues com-

mittee consisting mostly of representatives from each of the sections and other formal groups of the society. These representatives contribute issue papers on a voluntary basis, which are reviewed and voted upon by the committee and then by the executive board.

Another possibility would be to make the SRA Council responsible for approving any statement—if such responsibility is delegated by the membership in the first place—as the membership’s current elected representatives. The Council has the authority to establish a committee to actually develop, scrutinize, and recommend statements.

Still another model is a variation of the approach used by the Health Physics Society. A standing committee would be chaired by the SRA president, and its members would be past presidents of the Society. The presidents making up the committee would represent different segments of the risk business, such as physical sciences including engineering, health sciences, social sciences, and others. A telephone sampling procedure, such as a Bayesian sampling, would be used to extract a quick consensus from the SRA membership on issues judged by the committee to be of sufficient importance to warrant taking a position.

Q: In developing positions, what’s the rush?

A: SRA is not a lobbying organization and has no deadlines to meet. Perhaps it should not take on issues that seem to require such rapid action that the membership doesn’t have time to give before-the-fact input. The members should be given a deadline, but never an impossibly short one, in any mechanisms for developing SRA positions.

Occasionally there is a need to respond quickly, for example, to provide comments within a time frame set by the *Federal Register*. SRA should consider whether responsibility for short-term responses could be delegated to a committee, with longer-term responses aired before the entire membership in the newsletter or at a business meeting.

Q: Do the sections outside the United States, such as SRA-Europe and SRA-Japan, think it is a good idea for the Society to develop a process for taking policy positions? What mechanism might they envision for carrying out the development, approval, and promulgation of a position? Should a distinction be made between position statements made on regional issues as opposed to international ones?

A: This question is a most important one, as SRA expands its international focus. We clearly need input from all sections. For example, something largely affecting Europe might be issued by SRA-Europe with the approval of its own Council; other Councils might adopt it if they wished. Something with global meaning might require the approval of the international council.

The ad hoc committee is eager for your thoughts about whether SRA should embark on this new direction, as well as your ideas about how such a venture might best be accomplished.

Honorarium Donations Could Make a Difference

SRA member Bert Hakkinen of The Procter & Gamble Company hopes he is starting a trend. When he presented a seminar at Bowling Green State University, he contributed his honorarium of \$50 to the Society to be used either for student travel to annual meetings or for the Reference House project.

"I know \$50 isn't a fortune, but if every SRA member did this it would make a difference," Hakkinen said.

To make such a contribution, members should ask the institute involved to make the check payable to the "Society for Risk Analysis." Members should then send a letter to the SRA Secretariat's office designating which SRA program should receive the funds.

One ongoing funding need is aid for fledgling SRA chapters in countries such as Russia, Croatia, and the Czech Republic. Specific needs include help with annual meeting travel expenses, dues, and mailing costs for extra SRA newsletters.

In Russia, for example, a dozen risk analysis professionals may share one issue of SRA's newsletter. In a thank-you letter for five copies of the second quarter 1993 RISK newsletter sent to him in Moscow, Vitaly Eremenko wrote, "Thank you very much for the sudden luxury present of five copies of the RISK newsletter. You requested for me to advise you if you are sending more copies than we can use. You joke! Five copies only went to five chapters, and we already have nine chapters. Once more, thanks for the present. We'll wait for future issues of RISK newsletter."

SRA Job Fair Considered

Among its several ideas on the drawing board, the SRA Council is considering hosting a job fair as part of annual meetings.

"We are considering several options, including a job fair that would run like a placement center at the annual meeting," said SRA Councilor Vicki Bier. "Another idea is to have a system similar to a job bank, where employers and prospective applicants submit information on a regular basis year-round."

Plans are still in the early stages, although Bier says it would be possible for a job fair to be held by the 1994 SRA Annual Meeting.

"We are contacting other societies to see how they do it, and we're drawing up a sample set of operating procedures," she said. "Anyone who has a suggestion should contact me."

Bier can be reached at the University of Wisconsin's Department of Industrial Engineering, telephone (608) 262-2064, fax (608) 262-8454.

Wilson Speaks at SRA-Europe Conference

SRA President Jim Wilson traveled to Rome, Italy, to speak before approximately 200 delegates at SRA-Europe's Fourth Conference, held October 18-20.

Attendees presented 110 oral and 100 poster papers on area risk analysis planning, risk communication, technical and technological items, safety, quality and auditing systems, modeling, risk management, nuclear issues, legislation, insurance, and transport systems.

The proceedings can be ordered from Kate Ody, Four Elements Ltd., Greencoat House, Francis Street, UK-SW1H 1DP London, United Kingdom, telephone (44 71) 973 8041, fax (44 71) 973 8042. (Editor's note: The 1994 first quarter issue of RISK newsletter will include a full report on the conference.)

SRA-Japan Schedules Sixth Annual Meeting

The Sixth Annual Meeting and Symposium of SRA-Japan will be held on November 25-26, 1993, in the conference room of Yasuda Maritime & Fires Insurance Ltd., Shin-Juku, Tokyo. The general theme of the meeting is "Informed Consent and Risk Communication." In addition to three sessions on risk communication and decision making, risk management and insurance, and environmental audit and risk management, the first president of SRA-Japan, Tomitaro Sueishi, will speak on "Safety and Danger: Dimensions of Risk Sciences."

On October 18-19 several members of SRA-Japan participated in a two-day workshop, "Advances in Risk Assessment and Risk Management." The workshop was the joint effort of the National Institute of Environmental Studies of Japan and the U.S. Environmental Protection Agency. Five sessions were held on topics that included risk assessment of ecosystem effects, recent progress in risk assessment methodologies, risk characterization and decision making, and international cooperation.

In September SRA-Japan published "Risk Lexicon," which summarizes various approaches to risk analysis, in the *Japanese Journal of Risk Analysis*, Vol. 5, No. 1. Thirty survey papers were included in the special issue of the journal. Although the table of contents is written in English, the papers are written in Japanese. Anyone interested in obtaining a copy of the journal should contact the SRA-Japan secretary at the address given below.

For more information on the above activities, contact the Deputy President and Secretary of SRA-Japan, Saburo Ikeda, c/o Institute of Socio-Economic Planning, University of Tsukuba, Tsukuba, Ibaraki 305, Japan, telephone (298) 53-5380, e-mail ikeda@shako.sk.tsukuba.ac.jp, fax (298) 55-3849.

Nine SRA Chapters Forming in Russia

Vitaly A. Eremenko, an SRA-Europe executive committee member and director and professor at the International Centre of Educational Systems in Moscow, reports that considerable progress has been made in organizing the chapters of the Society for Risk Analysis in the Russian Federation (RF). Following approval of a charter for SRA-RF chapters by the SRA-Europe executive committee last April, Eremenko met on September 15 with local chapter chairmen and leaders from nine Russian regions to discuss the formation of the chapters. Both the charter and several chapters were approved by the attendees, who represented 118 risk analysts in Russia. Until an organizing conference and elections are held, Eremenko will be the official representative of the group to the international Society.

Most of the attendees are directly involved in risk projects and all expressed a hope that their local chapters could be closely affiliated with chapters of the parent organization. In that manner, not only would their local chapter problems be solved more rapidly, but also their regional risk projects would benefit from international consultations.

They also expressed an eagerness to receive information published by the international SRA, requesting that the nine potential chapters each receive one copy of the international journal *Risk Analysis* and *RISK newsletter*. In addition, they wish to receive publications from SRA-Europe and possibly from SRA-Japan, as well as any risk publications initiated within Russia itself.

The regions represented at the meeting, which was held following a four-day international conference in Moscow (see box), included Northern Ossetia, the St. Petersburg region, Komi Republic (Sictivcar), Ural (Perm), Siberia (Novosibirsk and Tomsk), the Moscow and Tula regions (Novomoscowsk), Saratov, etc.

For more information on the SRA-RF chapters, contact Vitaly A. Eremenko, International Centre of Edu-

Ecological Conference Held in Moscow

An international conference on Ecological Safety of Regions and Market Economy was held in Moscow on September 6-10 under the auspices of the United Nations Environment Program. Participating organizations included the Ministry of Environmental Protection of the Russian Federation and the International Non-governmental Institute of Biosphere Information Science.

The aim of the conference was to assess the national and world-wide experience in the field of regional ecological safety and to arrive at practical recommendations for handling ecological programs at national and regional levels.

SRA member Vitaly A. Eremenko, who is leading the formation of SRA chapters in Russia (see accompanying story) and is a national coordinator of the U.N. Interagency (U.N.I.-A.) Risk Project, chaired and presented the principal paper at a session on the practice of risk analysis in industrial areas of Russia. He focused on the goals and initial experience of four programs on population and environmental safety currently under way.

The projects cited were (1) the U.N.I.-A Risk Project, (2) a program of the Ministry of Atomic Energy of the Russian Federation (RF), (3) a program of the Ministry of Science Committee for Emergency Situations RF, and (4) a preliminary program of the Ministry of Environment RF on the ecological safety of Russia initiated to explore the possibility of applying risk methods.

Eremenko concluded that the only way these and future projects can be successfully carried out is through the development of an extensive and active network of risk analysts. Moreover, each project needs the financial support of an appropriate ministry of the Russian Federation.

The area covered by the nuclear project is Sosnovy Bor, an industrial area in the vicinity of an RBMK-type nuclear power plant in the St. Petersburg district. The Ministry of Atomic Energy is already planning similar studies for six other local areas. The area covered by the project of the Ministry of Science Committee for Emergency Situations RF is Vladicaucasus, a mountainous region in the vicinity of hazardous gas and oil pipelines and engineering structures. It, too, has similar studies scheduled.

Another area under study is Novomoscowsk, an industrial area in the vicinity of the largest chemical plants in the Tula district. Eremenko points out that the Ministry of Chemical RF, the Ministry of Metallurgy RF, and other ministries could support risk studies for the aforementioned and other industrial areas, and that these would eventually overlap with the U.N.I.-A Risk Project for local industrial areas. The result would be the creation of the needed network.

Other papers presented at the conference represented reports on the first steps of the U.N.I.-A Risk Project in specific areas under the sponsorship of the famous Dutch risk analyst Esco F. Blokker: in Ventspils (Latvia), Sosnovy Bor, and Novomoscovk. Additional papers were also given on work in the industrial areas of Vladicaucasus (Caucasus), Saratov (middle Russia close to the nuclear power plant Balakovo), Sictivcar (northwest Russia), as well as other projects. All these projects could greatly benefit from a network, especially one that includes members of the various sections and chapters of the Society for Risk Analysis in other countries.

ational Systems, Moscow, Center,
Novaja ploschad, 314, entr.1, telephone

(095) 275 3489, fax (095) 924 6852 or
882 5809, e-mail lmi@lmi.kiae.su.

SRA Requests Comments On Vision Statement

After more than a year of fine-tuning, the SRA Council has prepared its final draft of a vision statement for the Society for Risk Analysis.

The Council is now seeking written comments from Society members at large. Comments can be mailed, faxed, or e-mailed to Warner North, Decision Focus Inc., 650 Castro Street, Mt. View, CA 94041-2055, fax (415) 960-3656, e-mail wnorth@leland.stanford.edu.

North, who is the immediate past president of SRA, also will host a discussion on the vision statement from 3 to 4 p.m. on Monday, December 6, during the coffee break between sessions at the annual meeting in Savannah, Georgia.

The Council's final draft is as follows:

Statement of the Vision of the Society for Risk Analysis

The Society for Risk Analysis is a multidisciplinary, interdisciplinary, scholarly, international society that provides an open forum for all those who are interested in risk analysis. Risk analysis is broadly defined to include risk assessment, risk characterization, risk communication, risk management, and policy relating to risk, in the context of risks of concern to individuals, to public and private sector organizations, and to society at a local, regional, national, or global level.

The Society for Risk Analysis:

- brings together individuals from diverse disciplines and from different countries and provides them opportunities to exchange information, ideas, and methodologies for risk analysis and risk problem-solving;
- fosters understanding and professional collaboration among individuals for the purpose of contributing to risk analysis and risk problem-solving;
- facilitates the dissemination of knowledge about risk and risk analysis methods and their applications;
- encourages applications of risk analysis methods;
- promotes advancement of the state-of-the-art in research and education on risk analysis;
- provides services to its members to assist them in developing their careers in risk analysis.

Conference Dates Extended for PSAM-II

Due to the high number of papers which have been submitted to PSAM-II, the dates of the conference have been extended by one day. PSAM-II, "An International Conference Devoted to the Advancement of System-based Methods for the Design and Operation of Technological Systems and Processes," will be held on March 20-25, 1994, at the San Diego Hilton Beach and Tennis Resort in San Diego, California.

For more information, contact the technical program chairman, Professor George Apostolakis; Mechanical, Aerospace, and Nuclear Engineering Department; 38-137 Engineering IV; University of California; Los Angeles, CA 90024-1597, USA; telephone (310) 825-1300; fax (310) 206-2302.

Member News

Bengt B. Arnetz's new address is Sekt f stressforskning, Karolinska Institutet, Box 220, S-171 77 Stockholm, Sweden.

Ing. Karel Bláha's new contact numbers are (422) 67311 467 (phone) and (422) 67311 236 (fax). He is the contact for the SRA-Czech Chapter.

Louise Houde's new address is Environmental Health Service, Centre de Toxicologie, 570 rue Lacasse, Montreal, Quebec, H4C 2Y7 Canada, telephone (514) 989-8014.

Rao Kolluru, who is director of environmental health services at CH2M HILL in Reston, Virginia, has edited the book *Environmental Strategies Handbook: A Guide to Effective Policies and Practices* (McGraw-Hill; 1993). Using case studies, examples, and contributions from more than 30 experts, the handbook supports the premise that corporations can *enhance* profits by using innovative pollution prevention techniques, developing environmentally friendly products, and planning expansion in light of environmental regulations.

Robert J. Mulvihill of PRC Inc., president of the SRA-Southern California Chapter and chair of the SRA Engineering Specialty Group, submitted a paper on "The Use of the Probabilistic Safety Analysis Approach to Support the Total Quality Concept in Safety Management" to the Fourth Conference of SRA-Europe. Since Mulvihill could not attend the meeting, R.A. (Tony) Cox presented the paper for him.

The new address of the corporate headquarters of **NJC Enterprises Ltd.** is 79 T. W. Alexander Drive, 4201 Building, Suite 207, Research Triangle Park, North Carolina, telephone (919) 549-4100, fax (919) 549-4663. The company's mailing address is P.O. Box 14145, Research Triangle Park, NC 27709-4145.

Sciences International Inc., headed by former SRA president **Elizabeth Anderson**, has moved to King Street Station, 1800 Diagonal Road, Suite 500, Alexandria, VA 22314, telephone (703) 684-0123, fax (703) 684-2223.

Risk-Related Happenings

NRC Report Published on the National Biological Survey

The National Research Council's Committee on the Formation of the National Biological Survey recently released its report, *A Biological Survey for the Nation*, which proposes the creation of a program that pulls together public and private organizations for gathering information to prevent costly environmental confrontations over the nation's plant and animal life. The report also suggests that the National Biological Survey, a new agency in the U.S. Department of the Interior, should lead the program.

The program, called the National Partnership for Biological Survey, would help federal and state agencies, museums, academic institutions, and other non-governmental organizations coordinate their biological research efforts. Under the partnership, these groups would work together to gather, analyze, and maintain the scientific information needed to understand the status of the U.S.'s biological resources, how that status is changing, and why. "Coordinating the hundreds of research projects scattered throughout government agencies and private organizations will help provide answers about how to better manage the nation's biological resources," said committee chair Peter Raven, director of the Missouri Botanical Garden in St. Louis.

The committee noted that in order for the partnership, including the National Biological Survey, to carry out its responsibilities, it must be able to conduct credible science as well as stimulate and coordinate appropriate research. The partnership must be "science-driven and guided by highly qualified scientists." It also must be organized for program continuity and provide easy access to information for many different users and uses. Then, to communicate research results effectively to resource managers, legislators, and government regulators, the committee recommended the creation of a network of databases called the National Biotic Resource Information System and designed to make existing information more accessible and to establish mechanisms for efficient, coordinated collection and exchange of new information.

The report is available for \$26 (plus \$4 shipping for the first copy and 50 cents for each additional copy) from the National Academy Press, 2101 Constitution Avenue, N.W., Washington, D.C. 20418, telephone (202) 334-3313 or (800) 624-6242.

\$120,000 Traineeships Available

With doctoral fire-protection engineers "sorely needed" to write textbooks, perform leading-edge research, and work in industrial and government laboratories world-wide, Worcester Polytechnic Institute has made a new Graduate Research Traineeship Program available to engineering students through a grant from the National Science Foundation. Valued at up to \$120,000 per student and supporting study in fire protection engineering at the master's and

Ph.D. levels, these awards provide a \$14,000 per year stipend, full tuition, and additional professional development funds over a three- to five-year period. Applicants must be U.S. citizens or permanent residents and have a degree in any field of engineering or the physical sciences. For more information, contact the Center for Firesafety Studies at Worcester Polytechnic Institute, 100 Institute Road, Worcester, MA 01609, telephone (508) 831-5593.

New Exposure Data Manual Available

The American Conference of Governmental Industrial Hygienists announces the publication of *Threshold Limit Values (TLVs) and Biological Exposures Indices (BEIs) for 1993-94*. The 132-page booklet is used world-wide in recognizing, evaluating, and controlling exposures to hazardous agents. It includes the TLVs and BEIs for more than 700 chemical substances, physical agents, and biological exposure determinants.

The cost of each booklet is \$10, including shipping and handling. It is available from ACGIH, 6500 Glenway Avenue, Building D-7, Cincinnati, OH 45211, telephone (513) 661-7881, fax (513) 661-7195.

U.S. Creates New Council On Sustainable Environment

A 25-member President's Council on Sustainable Development was established by President Clinton in June to develop an action strategy on sustainable economic development during the next two years.

The council's charter defines sustainable development as "economic growth that will benefit present and future generations without detrimentally affecting the resources or biological systems of the planet."

The council, which was created as a result of the 1992 United Nations' Earth Summit, also will report its strategic plan to the United Nations' Commission on Sustainable Development.

"This council will build a new partnership among representatives from industry, government, and environmental groups," Vice President Al Gore said in a keynote address to the United Nations' commission in June. "It will develop new approaches to integrating economic and environmental policies."

President Clinton said he would appoint members who represent industrial, environmental, governmental, and not-for-profit organizations with experience relating to matters of sustainable development.

Fluoride Ceiling Appropriate, Council Says

Fluoride in drinking water doesn't produce cancer or kidney disease, according to the National Research Council's August 1993 report *Health Effects of Ingested Fluoride*.

Although the report calls for more research on fluoride exposure, it concludes that there is no basis to recommend that the U.S. Environmental Protection Agency lower the current ceiling of 4 parts per million for fluoride in drinking water.

To order the report, which costs \$39 including shipping, contact the National Academy Press at (202) 334-3313.

Environmental Network Launched for City, County Officials

An organization created to aid city and county officials responsible for complying with environmental requirements has published its first newsletter, *The Reporter*, and opened an information hotline.

Launched this year, the National Association of Local Government Environmental Professionals has also begun establishing a clearinghouse of documents ranging from in-depth U.S. Environmental Protection Agency technical reports to recycling guidebooks published by local governments.

Dues are \$350 for an individual or a local government membership, with discounts ranging from 15% to 50% available. A special rate of \$175 is available for full-time students. For more information, contact Sandra Garbrecht at (202) 638-6254. To join, send name, title, affiliation, address, and dues payment to Rena Steinzor, Esq., General Counsel; NALGEP; 1350 New York Avenue N.W., Suite 1100; Washington, D.C. 20005.

International Drinking Water Symposium Announced

Promoting state-of-the-art assessments of risks related to drinking water and expanding the capabilities of scientists and policy makers to manage these risks are the dual objectives of an international symposium in Rome, Italy, from September 13-17, 1994.

The International Association of Hydrological Sciences, which is headquartered in The Netherlands, and the Rome-based Istituto Superiore di Sanita are organizing the symposium titled "Assessing and Managing Health Risks from Drinking Water Contamination: Approaches and Applications." Main topics include sources and environmental transport of contaminants, drinking-water risk assessment from theory to application, epidemiological studies of health risks from drinking water, risk-based monitoring designed for water systems, treatment technologies, economics of ground-water contamination, international cooperation and cross-boundary issues, and specific issues for drinking-water management in developing countries.

Those wishing to present a paper should submit a one-page abstract in English by January 21, 1994. Selected authors may be requested to submit a full-length paper for the proceedings, which will be post-published.

Abstracts and requests for further information should be sent to: Eric G. Reichard, U.S. Geological Survey, Water Resources Division, 5735 Kearny Villa Road., Ste. O, San Diego, CA 92123, USA, telephone (619) 637-6834, fax (619) 637-9201, e-mail egreich@s101pcasnd.wr.usgs.gov.

Crossroads of Humanity Series Underway

Encouraging governments to move compliance-driven environmental health and safety requirements to risk-based criteria is one of the goals of the Crossroads of Humanity Series.

Scheduled from now through April 1995, the monthly series includes workshops, roundtables, and an international symposium on health, economics, and the environment.

The Crossroads of Humanity Series was initiated by the Medical University of South Carolina's Environmental Hazards Assessment Program following the receipt of a grant from the U.S. Department of Energy to study human health risk.

The inaugural Roundtable Forum, a made-for-television Socratic dialogue held last June, was a first step toward developing a realistic, risk-based methodological approach to environmental cleanup. The scenario for the series revolves around the mythical town of Purity and the dilemmas it faces after a toxic waste dump is discovered.

For more information, contact Cathi Bare or Richard Jablonski of the Environmental Hazards Assessment Program at (803) 792-1666.

NAS Releasing Reports in November

The National Academy of Sciences in Washington, D.C., is releasing the following reports in November:

- *Assessing Genetic Risks: Implications for Health and Social Policy*, from the Institute of Medicine,
- *Keeping Pace with Science and Engineering: Case Studies in Environmental Regulation*, from the National Academy of Engineering,
- *Soil and Water Quality: An Agenda for Agriculture*, from the National Research Council.

To order a report, contact the National Academy Press, 2101 Constitution Avenue, N.W., Washington, D.C., 20418, telephone (202) 334-3313.

Joint Institute for Energy and Environment Established

The Oak Ridge National Laboratory, the Tennessee Valley Authority, and the University of Tennessee have created the Joint Institute for Energy and Environment in Knoxville, Tennessee. Calling itself a "one-stop shopping center" for officials from developing countries interested in technical advice on energy, the environment, and economic development, the institute researches regional, national, and international issues.

The primary goals of the institute, which will conduct collaborative research involving people from all three facilities, include (1) offering training and on-the-job experience for the scientists, engineers, and policy analysts "who will shape the energy and environmental policies of tomorrow," (2) providing international leadership in the development of energy and environmental technologies consistent with emerging global goals, and (3) supplying, on a local level, help and advice to the State of Tennessee and the surrounding region on natural resources conservation and development, environmental protection, and economic development.

For more information, contact the institute at its main office on the University of Tennessee campus, telephone (615) 974-4251, fax (615) 974-1838.

Space Shuttle Software Scrutinized

To lessen the risk of disrupting the United States' space shuttle program, the National Aeronautics and Space Administration should improve its plan for ensuring the safety and reliability of computer software used for shuttle flights, according to a National Research Council report.

"Many of the same kinds of mistakes that played a role in the Challenger accident are now being repeated with shuttle flight software, especially with respect to the belief that safety precautions for established programs like the shuttle don't need to be as stringent as those for new programs," said committee chair Nancy Leveson, who is the Boeing Professor of Computer Science and Engineering at the University of Washington in Seattle.

Problems that the report cites include an over-reliance on contractors and faults in the verification and validation process for software. To order the report, which costs \$39 including shipping, call the National Academy Press at (202) 334-3313.

CAST Supports Free Trade Agreement

A new report by the Council for Agricultural Science and Technology in Ames, Iowa, supports the controversial North American Free Trade Agreement.

"Fears of the North American Free Trade Agreement are not well founded," the non-profit Council said in a summary of its report. "The only way to assure that our standard of living continues to grow is to seek to make ourselves more competitive, not to protect our economy."

The 41-page report, titled *U.S. Agriculture and the North American Free Trade Agreement*, outlines the impact of the agreement on U.S. farms, consumers, and the environment. "The environmental provisions of the agreement attempt to establish the same standards for Mexico as those that prevail in the United States," CAST states.

A task force of seven scientists chaired by Edward Schuh, the dean of public affairs at the University of Minnesota, authored the report. Copies are available at a cost of \$10 each from CAST, 137 Lynn Avenue, Ames, Iowa 50014-7197, telephone (515) 292-2125.

Soil Washing Operation First in U.S.

The first full-scale soil washing operation in the United States is underway at a contaminated industrial site in Winslow Township, New Jersey.

The prime contractor of the site, which is contaminated with unsafe levels of copper, chromium, and nickel from operations of the King of Prussia Technical Corporation, is Alternative Remedial Technologies Inc. (ART). ART is a joint venture between the U.S. environmental services firm Geraghty & Miller Inc. and the Netherlands-based engineering and environmental firm Heidemij Holding N.V., which have recently announced a planned merger of the two companies.

The soil washing project involves using on-site machinery to screen 20,000 tons of contaminated soils through the use of hydrocyclones, which accomplish a precise separation between sands and clays. The sands are then treated by flotation techniques, and the clays are concentrated and dewatered into a dense sludge cake. Groundwater is also being collected, treated, and reinjected. ART plans to return more than 80% of the treated soil to the site.

Partnership Between Firms Finds Jobs for Graduates

Two of the first eight graduates of an Environmental Technician Training Program pioneered by the Los Angeles office of Geraghty & Miller Inc. in partnership with Southern California Edison Company have been hired by companies performing environmental work in Southern California. Funding for the initial program was provided by Geraghty & Miller, which wants to offer the classes again this winter in partnership with other environmental firms from Southern California. Interested companies should contact Tom Calabrese, telephone (818) 332-8010.

Carnegie Commission Releases Report

The Carnegie Commission on Science, Technology, and Government has released its report *Science and Technology in Judicial Decision Making*.

The report analyzes the way that judges, jurors, and expert witnesses in the federal court system handle complex science and technology issues, and it makes recommendations for improvements.

The recommendations include integrating scientific issues into traditional judicial education programs, establishing an independent nongovernmental Science and Justice Council, and encouraging judges to take an active role in managing the presentation of science issues in litigation.

To order the report, contact Delores Locascio of the Carnegie Corporation in New York, New York, at telephone (212) 207-6336 or fax (212) 838-6019.

U.S. Chapter News

Annual Chapter Breakfast Meeting Scheduled

The annual breakfast meeting of SRA chapter presidents will be held during the 1993 SRA Annual Meeting on Tuesday morning, December 7. Rae Zimmerman, chair of the SRA Sections and Chapters Committee, will preside. Any chapter president who cannot attend is encouraged to designate another chapter representative to attend.

President Wilson Addresses Columbia-Cascades Chapter

SRA President Jim Wilson recently addressed both sections of the Columbia-Cascades Chapter—the Cascades section in Seattle, Washington, on September 23 and the Columbia section in Richland on September 24.

Reviewing the history of risk analysis, Wilson said that the U.S. Food and Drug Administration (FDA) initiated human risk analysis in 1972 to limit the amount of various chemicals in meat. Since then, health risk assessment has branched into environmental risk assessment. Wilson believes that risk assessors will increasingly have to balance human and ecological risks. He also believes that all risk assessments possess some bias, such as the oft-hidden assumption that it is okay to put some sensitive people at risk. While such assumptions are offset, in many cases, by other protection mechanisms, all risk assessors must highlight and explain them when they occur and justify why they are acceptable.

Wilson also reviewed some of the key issues facing the Society. First, the SRA membership appears to be drifting from its original interdisciplinary charter to an organization with specific groups focused on such issues as exposure assessment, engineering, and risk communication. While not criticizing this change, he asked that the membership consider it carefully and deliberately choose this path if it is perceived to be positive.

Another issue that has resurfaced is certification. For Wilson, the key issue is how SRA should deal with this

topic. Many members feel that SRA should remain neutral on this issue, while others want a certification process developed. Finally, Wilson said the SRA must determine whether it should respond to requests to review various policy decisions associated with human health risks.

For information about the Columbia section's activities, contact James Dukelow, Battelle Pacific Northwest Laboratories, Battelle Boulevard, Richland, WA 99352, telephone (509) 372-4074, e-mail JS_Dukelow@ccmail.pgov. To inquire about the Cascades section's activities, contact George Cvetkovich, WISOR/Psychology, Western Washington University, Bellingham, WA 98225, telephone (206) 650-3544, e-mail CVET@nessie.cc.wvu.edu; or Thomas Murray, Boeing, LAD Safety Engineering, telephone (206) 965-9615, fax (206) 965-9949.

Metropolitan Chapter Cosponsors Meetings

The Metropolitan (Connecticut-New Jersey-New York) Chapter is cosponsoring two meetings this fall with the Environmental and Occupational Health Sciences Program of Hunter College.

The topic of the first meeting, held on October 21, was "Environmental Lead: A Major Health Risk," with Joseph Graziano of Columbia University speaking on "The Effect of Lead Exposure on Cognitive Function in Young Children" and Vincent Coluccio of ATC Environmental Inc. presenting "New York City's Lead Poisoning Problem."

The topic of the second meeting, on November 18, is "Occupational Exposure Databases." Morton Lippmann of New York University will speak on "Exposure Data Needs in Risk Assessment and Management: What Information Do We Need in Our Databases?" He will also report on the Conference on Occupational Exposure Databases, to be held October 31 through November 3 in McLean, Virginia, under the

auspices of the American Conference of Governmental Industrial Hygienists and the American Industrial Hygiene Association.

The chapter is planning to hold elections in the spring of 1994. The chapter president is Miriam de Salegui, who may be contacted at 845 West End Avenue, Apt. 5F, New York, NY 10025, telephone (212) 749-7961, fax (212) 678-6295.

New England Chapter and BRAG Continue Programs

The New England Chapter is again holding a series of seminars in conjunction with the Boston Risk Assessment Group, a cooperative effort that is actively supported by risk professionals in the New England region.

The first meeting of the 1993-94 series was held on September 22. Karen Vetrano of TRC Environmental Corporation spoke on "Odorous Emissions and Their Relationship to Human Health—A Case Study of MBTE in Gasoline," and Edmund Crouch of Cambridge Environmental Inc. spoke on "How to Derive Uncertainty Distributions for Carcinogenic Potency." An October 13 seminar featured Charles Gilbert of the University of Massachusetts at Amherst, whose topic was "Reducing Risks from Lead in the Residential Environment," and Hari Rao of the Connecticut Department of Health Services, who discussed "Physiologically Based Pharmacokinetic Models for Fluoride Uptake in Bone."

At a November 10 seminar, David Burmaster of Alceon Corporation will speak at 4 p.m. on "Dietary Fish Consumption Rates for Exposure Assessment"; and Brian Murphy of Gradient Corporation will speak at 5:30 p.m. on the "Migration of Toxic Vapors from Soil into Buildings." The meeting will be held at the Massachusetts Institute of Technology.

The chapter's president Alan Eschenroeder, says several organizations have been offered the opportunity to join the chapter as a sponsor, benefactor, or friend. For 1993-94, three organizations are benefactors, Rizzo

Associates Inc., HMM Associates Inc., and Gradient Corporation; and two are friends, Alanova Incorporated and Menzie-Cura & Associates Inc.

President Wilson to Visit Greater Pittsburgh Chapter

SRA President Jim Wilson will speak to the the Greater Pittsburgh Chapter on the topic "Thoughts on the Future of Health Risk Assessment" at its meeting at 7 p.m., November 16. The meeting will be held at the University of Pittsburgh Graduate School of Public Health Lecture Hall (Room A-115, Crab-tree Hall).

For more information, contact the chapter president, Vincent Arena of the University of Pittsburgh Department of Biostatistics, telephone (412) 624-3023; or the president-elect, Gregg Claycamp of the University of Pittsburgh Department of Environmental and Occupational Health, telephone (412) 967-6524.

East Tennessee Chapter Announces Officers

Current officers of the East Tennessee Chapter are: president, Joseph Minarick, Science Applications International Corporation, 301 Laboratory Road, Oak Ridge, TN 37830, telephone (615) 481-2117, fax (615) 482-6745; treasurer, Roy Hardwick, H & R Technical Associates, Oak Ridge, telephone (615) 483-0248; and secretary, Som Rao, Science Applications International Corporation, telephone (615) 481-4602.

Ohio Chapter Holds Meeting with ISSS

The Ohio Chapter met with the International System Safety Society (ISSS) in its 11th international meeting, held on July 29 in Cincinnati, Ohio. The chapter conducted an education course on Threshold Limit Values (TLVs). The speakers included Glenn Talaska of the University of Cincinnati, who discussed the development of biological exposure indices for TLVs, and Michael Dourson of the U.S. Environmental Protection Agency (EPA), who discussed occupational exposure limit data in relation to inhalation reference concentrations (RfCs).

Chapter members also attended a risk assessment course sponsored by the EPA. The course, which was chaired by Charlotte Cottrill of the EPA, focused on a general review of the risk assessment paradigm of the National Academy of Sciences in 1983 and risk communication examples.

The chapter is planning a fall dinner meeting. Please contact chapter president Mike Dourson for more information.

Research Triangle Chapter Holds Symposium

The Research Triangle Chapter is holding a day-long symposium on "Living With Uncertainty: The Future of Exposure Assessment" on Monday, October 25, at the William and Ida Friday Continuing Education Center of the University of North Carolina in Chapel Hill. A report on the symposium will be published in the next issue of RISK newsletter. For more information, contact Annie Jarabek of the EPA Environmental Criteria and Assessment Office, telephone (919) 541-4847.

The first meeting after the chapter's summer hiatus was held on October 6 at the Chemical Industry Institute of Toxicology. David Savitz of the Department of Epidemiology, the University of North Carolina at Chapel Hill, spoke on "Epidemiological Evidence on the Relationship of Power Frequency Electric and Magnetic Fields with Cancer."

Southern California Chapter Announces New Officers

Newly elected officers and councilors who will serve with the chapter

U.S. Chapter Contacts

Columbia-Cascades: Jim Dukelow, president, (509) 372-4074.
East Tennessee: Joe Minarick, president, (615) 481-2117.
Greater Pittsburgh: Vincent Arena, president, (412) 624-3023.
Lone Star: Ben Thomas, president, (713) 622-5888.
Metropolitan: Miriam de Salegui, president, (212) 749-7961.
Michigan: Rolf Hartung, president, (313) 936-0787.
National Capital Area: Rebecca Klemm, secretary, (202) 667-5244.
New England: Alan Eschenroeder, president, (617) 259-0886.
Northern California: Tom McKone, secretary, (510) 422-7535.
Ohio: Mike Dourson, president, (513) 569-7533.
Philadelphia: Eileen Mahoney, president, (215) 242-4388.
Research Triangle: Julie Kimbell, president, (919) 541-2070, ext. 364.
Rocky Mountain: Dennis Smith, president, (303) 966-8636.
Southern California: Mardy Kazarians, president, (818) 242-0401.

president, Mardy Kazarians, were announced at an October 5 meeting of the Southern California Chapter. The new officers are president-elect, Doug Orvis, Accident Prevention Group; secretary, Andrew A. Dykes, PLG Inc.; and treasurer, Vincent Ho, PLG Inc. Newly elected councilors include Dennis C. Bley, PLG Inc.; Robert Deshotels, Fluor Daniel Corporation; Roland Duphily, TRW Inc.; Larry R. Froebe, IT Corporation; and John Kulluk, City of Torrance Fire Department. Councilors continuing to serve are Sergio B. Guarro, Aerospace Corporation; Najmedin Meshkati, University of Southern California; Krishna Nand, Engineering-Science Inc.; and N. (Sank) Sankaran, Unocal Corporation. Also serving on the council is Robert J. Mulvihill, past-president.

The guest speaker at the October dinner meeting, held in San Clemente, was Michael V. Frank, who described his work in helping NASA use risk and reliability analysis techniques for evaluating a robot planned for a MARS mission and for deciding on the testing procedure for the O-rings of solid boosters.

Chapter members are currently gearing up to help in PSAM-II (see page 14). For more chapter information, contact: Mardy Kazarians, Kazarians & Associates, Suite 305, 220 South Kenwood Street, Glendale, CA 91205, telephone (818) 242-0401, fax (818) 247-4975.

Calendar of Events

November 25-26. SIXTH ANNUAL MEETING AND SYMPOSIUM OF SRA-JAPAN, Tokyo, Japan. Contact SRA-Japan Secretariat, Saburo Ikeda, Institute of Socio-Economic Planning, University of Tsukuba, 1-1-1 Tennoudai, Tsukuba, Ibaraki 305, Japan, e-mail ikeda@shako.sk.tsukuba.ac.jp, telephone (298) 53-5380, fax (298) 55-3849.

November 30 - December 1. THIRD ANNUAL CONFERENCE ON CLEAN WATER ACT REAUTHORIZATION, Doubletree Hotel, Arlington, Virginia. To register, contact Water Policy Report, P.O. Box 7167, Ben Franklin Station, Washington, D.C. 20044, telephone (703) 892-8505 or (800) 424-9068, fax (703) 685-2606.

December 1-3. SEMINAR ON FUNDAMENTALS OF GROUNDWATER CONTAMINATION AND REMEDIATION TECHNIQUES, Chicago, Illinois. Presented by the University of Wisconsin's Department of Engineering Professional Development and Geraghty & Miller Inc. For more information contact Philip O'Leary, program director at the University of Wisconsin-Madison, Department of Engineering Professional Development, telephone (608) 262-0493. To enroll, contact telephone (800) 462-0876 or fax (608) 263-3160.

December 5-8. 1993 SRA ANNUAL MEETING, Savannah, Georgia (see article on page 1). Contact SRA Secretariat, Suite 130, 8000 Westpark Drive, McLean, VA 22102, telephone (703) 790-1745, fax (703) 790-9063.

January 24-27. 1994 ANNUAL INTERNATIONAL RELIABILITY AND MAINTAINABILITY SYMPOSIUM AND EXHIBITS PROGRAM, Anaheim Marriott Hotel, Anaheim, California. For registration information, contact Joel Magnus, P.O. Box 765, Camden, NJ 08101, telephone (609) 338-2442, fax (609) 338-2555.

March 13-17. SOCIETY OF TOXICOLOGY 1994 ANNUAL MEETING, Loews Anatole Hotel, Dallas, Texas. Includes symposium on Methodology for Cancer Risk Assessment. For more information, contact Society of Toxicology, 1101 14th Street, N.W., Suite 1100, Washington, D.C. 20005-5601, telephone (202) 371-1393, fax (202) 371-1090.

March 14-18. IAEA SYMPOSIUM ON INTERNATIONAL SAFEGUARDS, Vienna, Austria. For more information, contact International Atomic Energy Agency, IAEA - SM - 333, Vienna International Center, P.O. Box 100, A-1400 Vienna, Austria, telephone (43 1) 2360, fax (43 1) 234564.

March 20-25. PSAM-II INTERNATIONAL CONFERENCE ON SYSTEM-BASED METHODS FOR THE DESIGN AND OPERATION OF TECHNOLOGICAL SYSTEMS AND PROCESSES, San Diego, California. Contact George Apostolakis, Mechanical, Aerospace, and Nuclear Engineering Dept., 38-137 Engineering IV, University of California, Los Angeles, CA 90024-1597, telephone (310) 825-1300, fax (310) 206-2302.

March 21-24. EXPLORISK '94 - FIRST INTERNATIONAL EXHIBITION ON EXPLOSION SAFETY AND RELATED RISK CONTROL, Gent, Belgium. Contact Ronny

Deschoolmeester, Manager, EuropEx Events N.V., Heiveldekens 8, B-2550 Kontich, Belgium, telephone (32) (03) 458 29 48, fax (32) (03) 458 29 02, telex (46) 35507 b.

April 6-7. THIRTIETH ANNUAL MEETING OF THE NATIONAL COUNCIL OF RADIATION PROTECTION AND MEASUREMENTS, Crystal City Marriott, Arlington, Virginia. For more information, contact the National Council on Radiation Protection and Measurements, 7910 Woodmont Ave., Suite 800, Bethesda, MD 20814-3095, telephone (301) 657-2652, fax (301) 907-8768.

April 10-12. FOURTH SYMPOSIUM ON ENVIRONMENTAL TOXICOLOGY AND RISK ASSESSMENT: TRANSBOUNDARY ISSUES IN POLLUTION—AIR, SURFACE, AND GROUNDWATER, Montreal, Quebec, Canada. Sponsored by the American Society for Testing and Materials (ASTM) Committee E-47 on Biological Effects and Environmental Fate and held in conjunction with the committee's standards development meetings, April 12-14. For information, contact the symposium chairman, Thomas W. La Point, Clemson University, P.O. Box 709, Pendleton, SC 29670, telephone (803) 646-2237, e-mail LAT@CLEMSON.CLEMSON.EDU, fax (803) 646-2277.

April 19-21. INTERNATIONAL SYMPOSIUM ON HEALTH HAZARDS OF GLYCOL ETHERS, Prémontres Cultural Centre, Nancy-Pont-à-Mousson, France. Working languages of the symposium are English and French, with simultaneous translations provided. Deadline for submitting abstracts is December 31, 1993. For information contact International Symposium on Health Hazards of Glycol Ethers, INRS, Avenue de Bourgogne, BP 27 - F 54501 Vandoeuvre Cedex, France, telephone (33) 83 50 20 27, fax (33) 83 50 20 96, telex 850 778 F.

April 24-28. FOURTH INTERNATIONAL CONFERENCE ON NUCLEAR FUEL REPROCESSING AND WASTE MANAGEMENT, Queen Elizabeth II Conference Centre, London, United Kingdom. For more information, contact Clare Chipperfield, Expotel Special Events, Kingsgate House, Kingsgate Place, London NW6 4HG, telephone (044) 71 328 4466, fax (044) 71 624 6449.

July 10-14. FIFTH U.S. NATIONAL CONFERENCE ON EARTHQUAKE ENGINEERING, Chicago, Illinois. For conference information, contact Earthquake Engineering Research Institute, 499 14th Street, Suite 320, Oakland, CA 94612-1902, telephone (510) 451-0905, fax (510) 451-5411. For technical program information, contact Claudia Cook, Newmark Civil Engineering Laboratory, University of Illinois, 205 N. Mathews, Urbana, IL 61801-2397, telephone (217) 333-0498.

August 20-26. FRONTIERS OF STATISTICAL ECOLOGY AND ECOLOGICAL STATISTICS, Sixth International Congress of Ecology, Manchester, United Kingdom. For information, contact G.P. Patil, Center for Statistical Ecology and Environmental Statistics, Department of Statistics, Pennsylvania State University, University Park, PA 16802, telephone (814) 865-9442, fax (814) 863-7114, e-mail GPP@PSUVM.bitnet.

Risk Courses

November. POST-GRADUATE STUDIES OF INDUSTRIAL AREAS RISK MANAGEMENT SYSTEMS: THEORY, PRINCIPLE OF OPTIMIZATION, AND PROJECT MANAGEMENT, International College at Moscow State University, Russia. Two-year course of studies under the auspices of Vitaly A. Eremenko, director of the Department of Industrial Areas Risk Management of the Industrial Center of Educational Systems (I.C.E.S.), Moscow, and member of the SRA-Europe Executive Committee. Costs for tuition, room, and board per year are approximately \$4,300. Concerned individuals from non-OECD countries especially are welcome to enroll. For more information contact Vitaly A. Eremenko, I.C.E.S., Novaya ploschad 3/4, entr. 1, Moscow, Center, Russia, fax (095) 924-6852, e-mail lmi@lmsis.kiae.su.

November 16-17. HACCP (HAZARD ANALYSIS CRITICAL CONTROL POINT): A BASIC SYSTEM FOR FOOD PROTECTION, Cornell University, Ithaca, New York. Presented by the Food Processors Institute, which may be contacted for more information, 1401 New York Avenue, N.W., Suite 400, Washington, D.C. 20005, telephone (202) 393-0890.

November 18. RISK COMMUNICATION, University of Washington, Seattle, Washington. Presented by the Northwest Center for Occupational Health and Safety of the University of Washington Department of Environmental Health, which may be contacted for more information, telephone (206) 543-1069.

November 19. RISK ASSESSMENT, University of Washington, Seattle, Washington. (See November 18 entry for information on whom to contact.)

November 30 - December 1. HACCP: A BASIC SYSTEM FOR FOOD PROTECTION, Cornell University, Ithaca, New York. (See November 16-17 entry.)

December 8-10. USE OF HAZARD & OPERABILITY (HAZOP) STUDIES IN PROCESS RISK MANAGEMENT, Ramada Hotel Pennsylvania, New York, New York. Sponsored by American Institute of Chemical Engineers (AIChE). For technical questions regarding the course, call AIChE Continuing Education Department, telephone (212) 705-7526. To register, contact AIChE, P.O. Box 13915, Newark, NJ 07101-5315, AIChexpress Service Center telephone 1-800-AIChemE, fax (212) 705-8400.

March 2-4, 1994. USE OF HAZARD & OPERABILITY (HAZOP) STUDIES IN PROCESS RISK MANAGEMENT,

Doubletree Hotel at Post Oak, Houston, Texas. (See previous entry for information on whom to contact.)

April - May 1994. SAFETY ANALYSIS & RISK ASSESSMENT COURSES FOR CHEMICAL PROCESS INDUSTRY PRACTITIONERS, Atlanta Renaissance Hotel, Atlanta, Georgia. April 11-15, Hazards Evaluation: Qualitative Methods. April 25-29, Hazards Evaluation: Quantitative Methods. May 2-5, Consequence Assessment & Mitigation. (See December 8-10 entry.)

April 13-15. RISK ASSESSMENT IN THE CHEMICAL INDUSTRY, Atlanta Renaissance Hotel, Atlanta, Georgia. (See December 8-10 entry.)

April 20-22. USE OF HAZARD & OPERABILITY (HAZOP) STUDIES IN PROCESS RISK MANAGEMENT, Atlanta Renaissance Hotel, Atlanta, Georgia. (See December 8-10 entry.)

May 17-20. TWELFTH SUMMER INSTITUTE IN RISK MANAGEMENT IN ENVIRONMENTAL HEALTH AND PROTECTION (including QUANTITATIVE RISK ASSESSMENT), Robert F. Wagner Graduate School of Public Service, New York, New York. Environmental health risk management, quantitative risk assessment, and risk communication for chemical wastes. Topics include environmental fate and transport, toxicology, exposure assessment and dose-response estimation; legal, financial, and administrative aspects of risk management; risk perception and communication; applications to hazardous waste management, drinking water, and urban area issues. Tuition for graduate course credit, \$1,660 (plus \$33 fee); for non-credit certificate, approximately \$900. Courses are scheduled 9 a.m. to 5 p.m. For more information contact Rae Zimmerman, Course Director; Wagner Graduate School of Public Service; New York University; 4 Washington Square North; New York, NY 10003; telephone (212) 998-7432 or -7430.

July 11-15. THIRD SUMMER INSTITUTE IN ENVIRONMENTAL LAW, Robert F. Wagner School of Public Service, New York, New York. Environmental laws concerning air and water quality, solid and hazardous waste, and toxic torts are covered from the perspective of property transfers, liability, public disclosure, citizens suits, enforcement, the application of health and environmental standards, and other topics. Co-directors: Michael B. Gerrard of Berle, Kass & Case and Rae Zimmerman of The Wagner Graduate School of Public Service. Tuition for graduate course credit, \$1,660 (plus \$33 fee); for non-credit certificate, approximately \$900. Courses are scheduled 9 a.m. to 5 p.m. (See previous entry for information on whom to contact.)

Calendar of Events

(continued)

September 13-17, 1994 INTERNATIONAL SYMPOSIUM ON ASSESSING AND MANAGING HEALTH RISKS FROM DRINKING WATER CONTAMINATION: APPROACHES AND APPLICATIONS, Istituto Superiore di Sanita (ISS), Rome, Italy. Organized by the International Association of Hydrological Sciences and ISS. For information, contact Eric G. Reichard,

U.S. Geological Survey, Water Resources Division, 5735 Kearny Villa Road, Suite O, San Diego, CA 92123, telephone (619) 637-6834, e-mail egreich@s101pcasnd.wr.usgs.gov.

July 2-6, 1995. VII INTERNATIONAL CONGRESS OF TOXICOLOGY—HORIZONS IN TOXICOLOGY: PREPARING FOR THE 21ST CENTURY, Seattle, Washington. Contact ICT VII, c/o Society of Toxicology, 1101 14th Street, N.W., Suite 1100, Washington, D.C. 20005-5601, telephone (202) 371-1393, fax (202) 371-1090.

Reference Book

(Continued from page 1.)

Hakkinen, who is a senior scientist in toxicology and risk assessment at The Procter & Gamble Company in Cincinnati, Ohio, conceived the initial idea for the project during a meeting of the SRA Exposure Assessment Specialty Group in December 1991. "I had been thinking about a project like this for some time," he said. "There appeared to be a consensus that a document of this nature was needed, and in my own work I have found it difficult through the years to find certain types of residential exposure assessment information."

After the specialty group adopted the project, which was initially called Reference House, it quickly mushroomed and gathered national interest.

In September, the project took a leap forward when the EPA awarded a cooperative agreement and \$250,000 in funding to SRA for the project. SRA, which is managing the project, and ISEA, which is providing technical support, estimate that a total of \$500,000 is needed to fund the two-year effort. The Exposure Assessment Task Group of the Chemical Manufacturers Association also has provided \$15,000 initial funding and is planning to provide additional funding.

The final, peer-reviewed document will be a consensus of approximately 50 scientists who will represent universities, industries, consulting firms, and government agencies. A management committee, headed by SRA Councilor David McCallum, is overseeing the project and expects to appoint the editorial board by yearend. In addition to McCallum, Management Committee members selected to date include past president Jerry Schroy of ISEA and SRA members Barbara Peterson, Paul Price, and Harlee Strauss. SRA President Jim Wilson is an ex-officio member of the committee.

"Because this will be a consensus effort, the result will be more comprehensive than what any single scientist could provide," Whitmyre said.

The document will provide key data, assumptions, and methods needed

for performing an assessment of exposures of occupants inside a residence or in the surrounding yard. This will include parameters, such as human water consumption and room air changeovers per hour, and specialized methodologies, such as indoor air modeling software and dermal exposure models. Examples of scenarios to be covered include inhalation of volatiles from consumer products, dermal absorption during showering, and ingestion of contaminated materials from hand-to-mouth activity.

Joint Project Has Four Main Goals

The residential exposure assessment project that the Society for Risk Analysis is conducting in a joint venture with the International Society of Exposure Analysis and the U.S. Environmental Protection Agency will facilitate a broad-based exchange of information on:

- the state-of-the-art methodologies in residential exposure assessment,
- the data currently available for residential exposure assessment parameters,
- the research needs implied by data gaps, and
- educational and training materials and information exchange, such as workshops.

"Right now it is hard to compare one residential exposure assessment with another because everybody starts from a different point," said McCallum of Columbia University's Center for Risk Communication, who is the principal investigator of the project.

Organizers also hope to pinpoint gaps in research data and to outline study protocols for addressing these needs. "We want to create a list of hot research topics and publicize this in the scientific community so that people can start researching these areas," McCallum said.

"There are a lot of data gaps out there, and this project will attempt to

identify them and put them into the proper perspective," said Liz Bryan, the EPA coordinator for the cooperative agreement. Bryan will serve on the Management Committee. Other EPA staff members will help write chapters and provide technical assistance.

Creating a document that can double as a textbook for graduate students studying residential exposure assessment is a key motivation for EPA's involvement, she said. "One of our major goals with this cooperative agreement is to make a book that is available to students and to the public."

That is also a driving force for SRA organizers, Whitmyre said. "It is generally realized that there is no formal training in residential exposure assessment. This will provide a means of educating graduate students so that when they come out of their programs, the quality of the residential exposure assessment they perform will be improved. It will reduce the learning curve."

In addition to SRA, ISEA, CMA, and the EPA, other groups involved thus far in the project include the U.S. Department of Energy, Chemical Specialties Manufacturers Association, and Responsible Industry for a Sound Environment.

Hakkinen considers the 1995 target goal for publishing the book to be realistic, even though the management committee won't hold its first meeting until the middle or end of November.

"It depends on how much effort people put behind it," he said. "I feel like this project has been going 75 miles per hour. When I look at how far it has come since December 1991 — we now have a cooperative agreement with EPA and we're getting ready to hold our second workshop — I think we can make it."

Editor's note: Events at the 1993 SRA Annual Meeting related to the residential exposure assessment project include a training workshop on December 5 (see page 6) and a panel discussion on the project and on federal, state, university, and industry activities in residential exposure assessment on December 8.

Advertisements

Director, Environmental Epidemiology and Occupational Health

The Connecticut Department of Public Health and Addiction Services is seeking an environmental health scientist with administrative experience to lead a staff of 20 in the Environmental Epidemiology and Occupational Health (EEOH) unit. The EEOH unit works with local, state, and federal agencies, and the public in assessing environmental health risks and includes program areas of occupational health, health assessment, and radon. Applicants must be skilled in epidemiology, toxicology, statistics, assessing risks and communicating with the public. Affiliation with major universities and medical centers can be arranged. Salary range is \$56,217 to \$79,610. This is a competitive civil service position.

This position requires two years of experience in a supervisory, administrative or consultative capacity in epidemiology, toxicology or environmental engineering.

For an application call Richard Andisio, Department of Administrative Services, Personnel Division at (203) 566-3993.

An Affirmative Action and Equal Opportunity Employer

Assistant Professor of Risk Analysis and Management

The Harvard School of Public Health is searching for an assistant professor of risk analysis and management. The individual will be responsible for teaching and conducting research in regulatory toxicology, risk assessment, and environmental policy. Collaborative research is expected with faculty and staff of the Harvard Center for Risk Analysis. The individual will not be expected to perform laboratory-based research. The primary appointment will be made in the Department of Health Policy and Management. Affiliations with the Department of Molecular and Cellular Toxicology and/or the Department of Environmental Health are possible, depending upon the candidate's background and interests. Qualifications for the position include a doctorate in toxicology or a related discipline, a record of collaboration with scientists from other disciplines, demonstrable interest in environmental policy as reflected in scholarly publications, and evidence of successful teaching in the fields of regulatory toxicology and risk assessment. *Women and minority candidates are particularly encouraged to apply.*

Send curriculum vitae, letter of application, and names and addresses of three references to:

Dr. John D. Graham, Chair
Health Policy and Management Search
Harvard School of Public Health
718 Huntington Avenue
Boston, MA 02214

RISK newsletter's Policy On Classified Advertisements

The Society for Risk Analysis accepts classified advertisements under the following guidelines:

Employment Advertisements. Organizations may purchase space for advertisements of employee openings at a cost of \$250 for a 3.25-inch-wide by 3-inch-high column (about one-fourth page) in 9-point type. The column length of an ad may be increased beyond 3 inches at a cost of \$100 per inch. Camera-ready ads are acceptable.

Individual members of SRA may place in the newsletter, at no charge, an advertisement seeking employment for themselves as a benefit of SRA membership. The advertisement must fit within a 3-inch-high column.

Books and Software. Advertisements for books and software will be accepted at a cost of \$100 per 1-inch column length of a 3.25-inch-wide column.

The newsletter editor has the responsibility and the absolute right to ensure that the text of any ad is suitable for publication, and to deny, on reasonable grounds, any request to publish an advertisement.

The newsletter is published four times a year (January, April, July, October). Advertisements should be submitted to the editor, with billing instructions, by the first day of each of those months.

Annual Meeting

(Continued from page 4.)

Organizing Committee

President-elect Robert Tardiff is the chair of the 1993 SRA Annual Meeting. The co-chairs of the Technical Program Committee are Bob Hetes of the Research Triangle Institute, Deborah Amaral of the University of North Carolina-Chapel Hill, and Annie Jarabek of the U.S. Environmental Protection Agency in Chapel Hill, North Carolina. Sue Burk of the SRA Secretariat's office is in charge of arrangements.

Fees

The fee for the annual meeting, which includes luncheons on Monday, Tuesday, and Wednesday, is \$190 for members who preregister by November 19, \$220 for members who register on site, \$70 for students who preregister, and \$100 for students who register on site. For non-members, the preregistration fee of \$265 and the on-site registration fee of \$295 include a one-year Society membership and newsletter and journal subscriptions. These annual meeting fees do not include the Sunday workshops, which are an additional \$150 each for members, non-members, and students.

For registration information, call the SRA Secretariat at (703) 790-1745. Hotel rates at the Hyatt Regency (telephone (912) 238-1234) are \$95 for a single room, \$105 for a double room, and \$129 for a triple or quad room.



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Help Us Get to Know You

In discussing how we could better serve the Society for Risk Analysis, those of us on the newsletter staff often mention that we wish we knew more about you the individual members—your background, your current interests and work areas, your location, and, yes, your age, gender, and appearance. What we would really like to have is a comprehensive and up-to-date vita on each of you with an up-to-date picture attached. With that information in hand, we would be spending less time searching for material needed for stories. We could also tell you more about the makeup of this multidisciplinary group of people who have been drawn together because of their common interest in minimizing the number and magnitude of risks to society and its environment.

As a first attempt to gather this information, and also to solicit your opinions on the strengths and weaknesses of the newsletter, at least one of us will be stationed at a table near the registration desk at the 1993 SRA Annual Meeting in Savannah. We are hoping you will fill out one of our questionnaires. Or, if you prefer, you could just bring us material you have already prepared, or even mail it to us.

In any case, stop at the table to visit us.

A Word of Explanation

Tec-Com Inc., which writes and produces RISK newsletter, has recently moved its main offices to a new address. That won't concern most of you since the address we have been publishing (1303 Wilson Road) is for our satellite office (my residence), where Mary Bryant's office is located. Those of you who call or fax the rest of us, however, should note that we are listing new phone numbers in the adjoining box. If you would like to write to us at our new office, the address is 7649 Oak Ridge Highway, Knoxville, Tennessee 37931.

—Lorraine Abbott

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