

RISK *newsletter*

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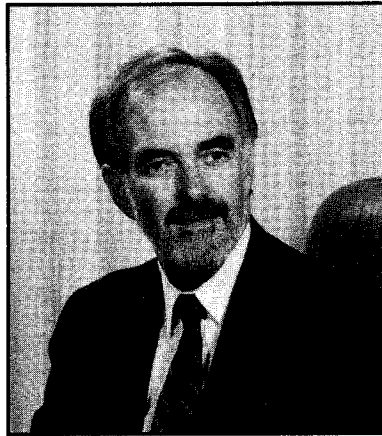
September, 1991

Baltimore Site of SRA's 1991 Annual Meeting

Emphasize Interdisciplinary Role, Says SRA's New President

Warner North, who will be handed the SRA presidential gavel at the Society's 1991 Annual Meeting in Baltimore, feels that SRA is making progress in developing risk analysis as a separate field, but that it should always view itself as an interdisciplinary society. "SRA synthesizes and complements work being done through the many disciplines involved with risk," he says.

Providing a common meeting ground for the various disciplines involved in risk analysis is a particularly important role, North believes. "It is my impression that risk continues to increase in importance for decision making by individuals, organizations, and governments. This increase reflects the complexity of our society and the perception of threats to human health and to the environment as technological change and resource development continue at an accelerating pace. As a result, the study of risk has become a focus within many professional disciplines, including engineering; the physical, biological, and social sciences; and business and public policy. In any one of these disciplines, many people would consider that dealing with risk is a central aspect of their work."



Warner North

"We need to learn from each other, and to evolve new ways of integrating, organizing, and communicating within the professional community and with the public. As an international society, SRA should also promote interchange across national boundaries and the application of risk analysis to international problems.

"It is my hope that SRA members will be activists as well as scholars," he adds, "and that together we will help to provide a better basis for decisions relating to risks.

(Continued on page 7.)

The 1991 Annual Meeting of the Society for Risk Analysis, to be held December 8-11 at the Hyatt Regency Baltimore in Baltimore, Maryland, should be the largest in the Society's history. A total of 316 papers plus 17 panel discussions will be presented in 92 sessions, with up to 10 sessions running concurrently Monday through Wednesday. President-elect Warner North is general chairman of the meeting.

The speakers at the opening Plenary Session will be this year's recipients of the SRA Distinguished Contribution Award, Paul Slovic and Baruch Fischhoff, who collaborated for a number of years in the development of ways to study the perception of risks (see page 10).

As had been anticipated, the five special interest groups formed at SRA's 1990 Annual Meeting have made significant contributions to the overall program. They have organized many of the sessions of invited or contributed papers, including several on specific current issues.

Global Warming. The Global Risk Analysis Interest Group, under the leadership of Rob Coppock, has put together a group of nine sessions extending over all three session days and addressing such issues as climate alterations, ozone depletion, and species loss. Seven of the sessions will include panel discussions. This group also invited Governor Daniel Evans to be the Wednesday luncheon speaker (see page 5).

(Continued on page 2.)

Topical Guide (Abbrev.) to SRA Annual Meeting Sessions (Based on Preliminary Program)

Clean Air Act Amendments:

- MAM-A: Policy and Regulatory Issues
- MPM-A: Benefit/Cost Analysis
- MPM-K: Risk Assessment Issues

Ecological Risks:

- TAM-G: Ecological Risk Assessment Guidance
- TAM-P: Risk Assessment Applications (1)
- TPM-G: Remedial Decision Process (1)
- TPM-P: Remedial Decision Process (2)
- WAM-G: Comparing Risks, Setting Priorities
- WAM-P: Risk Assessment Applications (2)

Economics:

- MAM-G: Valuation Issues
- MPM-S: Economics

Engineering:

- MAM-I: Coordinating Engineering Groups (1)
- MPM-F: Water Resources Infrastructure
- MPM-I: Coordinating Engineering Groups (2)
- WPM-F: Engineered Systems

Exposure Assessments:

- MAM-D: Government/Industry Programs
- MPM-D: Dietary Risks in Perspective (1)
- MPM-N: Dietary Risks in Perspective (2)
- TAM-D: Improving Dietary Exposure Estimates
- TAM-M: Multipathway Exposure
- TPM-D: Monte Carlo Assessment Techniques
- TPM-I: Waste Exposure Issues
- TPM-M: Groundwater and General Exposure Issues
- TPM-R: Consumer Product Risks
- WAM-J: Exposure Intakes
- WAM-D: Biomarkers
- WAM-M: Environmental Biomarkers
- WPM-D: Dermal Absorption of Toxicants

Global Risk Analyses:

- MAM-E: Attitudes
- MPM-E: Approaches and Issues (1)
- MPM-O: Approaches and Issues (2)
- TAM-E: Global Climate Projections
- TAM-N: Ozone Depletion
- TPM-E: Species Loss
- TPM-S: Assessment
- WAM-E: Future Research (1)
- WAM-N: Future Research (2)

Hazardous Waste/Emergency Planning:

- MAM-H: Hazardous Waste Siting
- MPM-H: Hazardous Waste Remediation
- TAM-H: Standard Setting/Cleanup Levels
- TAM-I: Hazardous Air Pollutants
- WAM-F: Nuclear Waste
- WAM-O: Nuclear Power/Emergencies
- WAM-R: Hazard Analysis/Emergency Planning
- WPM-I: Emergency Planning

Health Effects:

- MAM-B: Dioxin Toxicity: New Data
- MAM-F: Environmental Risk Assessment

- MPM-B: Carcinogenic Cell Proliferation
- MPM-L: Quantitating Reproductive Risks
- TAM-B: Aggregate Risk (1)
- TAM-K: Aggregate Risk (2)
- TAM-Q: Cancer Dose-Response Modeling
- TPM-B: Pharmacokinetic Modeling
- TPM-H: Integration of Health Risk Data
- TPM-K: Pharmacokinetics and Pharmacodynamics
- TPM-O: Health Effects/Test Systems
- WAM-C: Children at Risk
- WAM-K: Intuitive Toxicology
- WPM-B: Cancer Models and Mechanisms
- WPM-H: Mixtures and Noncarcinogenic Effects

High-Level Nuclear Waste Repository

(Yucca Mountain):

- TAM-F: Analyses (1)
- TAM-O: Analyses (2)
- TPM-F: Prob., Percept., Proposals (3)
- TPM-O: Prob., Percept., Proposals (4)

International Risks:

- MPM-J: International Roles (1)
- MPM-T: International Roles (2)

Risk Analysis Doctoral Programs:

- WAM-A: Panel Discussion: Pro & Con

Risk Communication:

- MAM-C: EPA Roundtable (1)
- MPM-C: EPA Roundtable (2)
- MPM-M: Organizational and Cultural Factors
- TAM-C: Media Impacts on Perception
- MPM-R: Public Participation (1)
- MPM-U: Public Participation (2)
- TAM-L: Agency Responses to Needs
- TPM-J: Interpretation of Information
- TPM-L: Effectiveness of Information
- TPM-T: Risk Communication Interest Group
- WAM-L: Perceptions on Radon and Ozone
- WPM-C: Risk Communication Research
- WPM-E: Perceptions and Misunderstandings

Risk Management/Decision Making:

- MAM-J: Models for Decision Making
- MPM-G: Public/Priv. Sector Decis. Mak. (1)
- MPM-Q: Public/Priv. Sector Decis. Mak. (2)
- TAM-A: Risk Management Models
- TPM-C: Incorp. Public Values in Risk Decis.
- TPM-N: Risk Reduction/Priorities
- WAM-I: Assessment/Management Interface

Space Risks:

- MPM-P: Space Vehicle Analyses

Uncertainty:

- TAM-R: Uncertainty—Methodology
- WAM-H: Uncert. in Health Risk Assess. (1)
- WAM-Q: Uncert. in Health Risk Assess. (2)
- WPM-A: Uncertainty—Case Studies

1991 Annual Meeting

(Continued from Page 1.)

Exposure Assessment. Paul Price and Barbara Peterson of the Exposure Assessment Group organized 13 sessions that also extend over the three-day program. The first session will outline the exposure assessment activities of the Environmental Protection Agency, the American Petroleum Institute, and the Chemical Manufacturers Association, with the remaining sessions largely focusing on specific exposure pathways.

Risk Communication. A large number of sessions have also been arranged by Ann Fisher and Lynn Luderer of the Risk Communication Group, including two EPA Roundtables patterned after the successful 1990 sessions. Within this series will be a meeting of the Risk Communication Group itself, scheduled for 5:30 PM on Tuesday.

Engineering. The Engineering Group will be represented by a series of four sessions on the national program to characterize Yucca Mountain, Nevada as the proposed site for a repository for high-level nuclear waste. Organized by Warner North, the sessions will include a panel discussion on the future prospects for high-level waste by the Director of the DOE Office of Civilian Radioactive Waste Management, the Nuclear Waste Negotiator appointed by President Bush, a representative from the state of Nevada, and several SRA members.

The Engineering Group has also put together several sessions which focus on coordinating the risk analysis efforts of engineering societies, risks associated with the U.S. water resources infrastructure, natural gas distribution systems, and other topics.

Space. A five-paper session on risks associated with the use of space vehicles has been organized by Hatice Cullingford. Radioactive releases from spacecraft utilizing nuclear energy will be addressed, as well as the risks of the failure of vehicle components.

Participants within the five interest groups and other SRA members have also collaborated to organize

Session Times

Monday		Tuesday		Wednesday	
MAM A-J:	10:30-12:00	TAM A-J:	8:30-10:00	WAM A-J:	8:30-10:00
MPM A-J:	1:30- 3:00	TAM K-R:	10:30-12:00	WAM L-R:	10:30-12:00
MPM K-T:	3:30- 5:00	TPM A-I:	1:30- 3:00	WPM A-I:	1:30- 3:00
MPM-U:	7:00- 8:30	TPM J-S:	3:30- 5:00		
		TPM-T:	5:30- 7:00		

multisessions with the following emphases.

1990 CAA Amendments. The 1990 Clean Air Act Amendments, which have many implications for risk analysis, will be the subject of three Monday sessions organized by Joellen Lewtas of the U.S. Environmental Protection Agency. The sessions will explore policy and regulatory issues; benefit/cost analysis with the consequent new role for risk assessment; and risk assessment issues and methodologies applicable under this new legislation.

International Focus. Also on Monday afternoon, two sessions planned by SRA's International Coordinator Vlasta Molak will focus on the role of risk analysis as a means for confronting common environmental problems among nations. These sessions will include speakers from Eastern Europe and the USSR.

Ecological Risks. Charles Menzie and Ron Landy have organized a series of sessions to address ecological risks, such as ecological risk assessment guidelines, comparative risks, priority setting, Superfund applications, and case studies of ecosystems.

RA Doctoral Programs. On Wednesday morning a panel including Lester Lave, Richard Wilson, Halina Brown, and Anthony Cox will argue the pros and cons of doctoral programs in risk analysis. John Graham will be the moderator.

Health Effects. Throughout the Annual Meeting, a large number of sessions will deal with risks to human health from toxic materials in the environment. The papers, assembled with the assistance of Cathy St. Hilaire and Jim Wilson, address both single and aggregate risks.

Other Sessions. The remaining sessions can be grouped under policy and methodology and include issues dealing with hazardous waste, emergency planning, uncertainties, economics, and decision making.

Annual Meeting Schedule

Sunday, December 8

- 9:30-5:00 Workshops
- 1:00-5:00 1990-91 Council Mtg.
- 3:00-8:00 Riskware '91
- 4:00-7:00 Registration
- 5:00-7:00 Welcome Reception

Monday, December 9

- 8:00-4:00 Registration
- 8:00-5:00 Riskware '91
- 8:30-10:00 Plenary Session
- 10:30-12:00 Program Sessions
- 1:30-5:00 Program Sessions
- 5:00-6:00 Annual Business Mtg.
- 7:00-8:30 Program Session

Tuesday, December 10

- 7:15-8:30 Chapter Breakfast
- 7:15-8:30 New Member Breakfast
- 8:00-4:00 Registration
- 8:00-12:00 Program Sessions
- 12:00-1:30 Luncheon/Speaker
- 1:30-5:00 Program Sessions
- 5:30-7:00 Program Session
- 7:00-9:00 1991-92 Council Mtg.

Wednesday, December 11

- 7:00-8:30 International Breakfast
- 8:00-10:00 Registration
- 8:30-12:00 Program Sessions
- 12:00-1:30 Luncheon/Speaker
- 1:30-3:00 Program Sessions

Luncheon Addresses. The luncheon speakers on Tuesday and Wednesday will be F. Henry Habicht II of the U.S. Environmental Protection Agency and the Federal Coordinating Council on Science, Engineering, and Technology; and The Honorable Daniel J. Evans, former Governor and Senator for the State of Washington and

chairman of Daniel J. Evans Associates (see page 5).

Workshops, Riskware '91. The 1991 Annual Meeting will also include four workshops on Sunday (see page 4) and a risk software and database exhibition on Sunday and Monday (see box below).

Annual Meeting Planners. On July 19, the session organizers listed above were joined by Adam Finkel, David McCallum, Mary Paxton, and Hugh Spitzer at the offices of the SRA Secretariat to arrange and schedule the submitted papers and panel discussions into the available time periods and hotel meeting rooms. Several SRA councilors and members of the National Capital Area Chapter have also assisted in making arrangements for the meeting.

Chairman's Comments. Warner North, chairman of the 1991 Annual Meeting, says that the tremendous response to the Call for Papers not only necessitated an increase in the number of parallel sessions at this year's meeting, but also, in some cases, required that as many as six papers be placed in a 90-minute session. If the size of the meeting continues to grow, decisions will have to be made whether to continue increasing the number of concurrent sessions (which requires ever larger hotels), or place some of the contributed papers in poster sessions, or extend the meeting an extra day. He urges members to make their preferences known to SRA Council members on how the Society should accommodate continuing growth at its annual meetings.

Riskware '91: An Exhibition of Software and Data Bases

An exhibition of risk analysis software and databases will be held at SRA's 1991 Annual Meeting on Sunday evening, 3 to 8 PM, and all day Monday, 8 AM to 5 PM in the Maryland Suite. The exhibition has been organized by Steve Lutkenhoff and Ron Marnicio of the Ohio Chapter, and is patterned after the chapter's successful local exhibition, Riskware '90.

Persons or groups wishing to exhibit software or databases at this event should contact Sue Burk at the SRA Secretariat, Phone 703-790-1745 or Fax 703-790-9063.

Major Provisions of Clean Air Act and Amendments

The Clean Air Act Amendments enacted by the U.S. Congress and signed into law by President Bush on November 15, 1990, will significantly impact the work of SRA members and will be a focus of the Society's forthcoming meeting. With the latest amendments, the major provisions of the Act are as follows:

Title I: Urban Air Quality. Creates new strategy to attack urban air pollution, particularly ozone, carbon monoxide, and particulate matter; allows some locales up to 20 years to come into compliance but requires constant progress.

Title II: Mobile Sources. Increasingly tightens tail-pipe emission standards; requires cleaner-burning gasoline for nine smoggiest cities; mandates alternative fuels for fleets in 22 urban areas; specifies numbers of low-emission vehicles to be introduced annually under California pilot program; requires EPA to issue standards for urban buses.

Title III: Hazardous Air Pollutants. Establishes program of technology-based emission standards for EPA-

listed sources of 189 hazardous air pollutants; requires health-based standards for remaining risks and controls emissions from "area sources." (See story on page 8.)

Title IV. Acid Rain. Sets up a two-stage program to control SO₂ and NO_x emissions; requires that by year 2000, SO₂ emissions be down 10 million tons per year and NO_x emissions be down 2 million tons per year, both from 1980 levels.

Title V. New Source Permits. Creates state-run programs requiring permits and fees to operate many sources of air pollutants.

Title VI. Protecting Stratospheric Ozone. Establishes national policy to end production and use of CFCs (chlorofluorocarbons) and carbon tetrachloride by year 2000 and other substances later; provides for recovery, recycling, and disposal of ozone-depleting substances.

Title VII. Enforcement. Expands enforcement provisions and increases certain penalties.

Annual Meeting Workshops

The following four workshops will be offered by SRA at the Hyatt Regency Baltimore on Sunday, September 8:

Fundamentals of Risk Analysis has been organized by Vlasta Molak, SRA Secretary and International Coordinator. The speakers include Paul Slovic, Decision Research; Stan Kaplan, PLG, Inc.; Robert McGaughy, U.S. Environmental Protection Agency; Leslie Steiner, National Institute for Occupational Safety and Health, Cincinnati; Smita Siddhanti, The Cadmus Group; and Barbara Davies, CH2M Hill. The purpose of the workshop is to provide the participants with the body of knowledge that is essential for risk analysis applications in various fields of human endeavor, bridging the gap between various specific applications of risk analysis and creating a common basic language of risk analysis for all of its practitioners. Topics which will be addressed include the types and applications of risk analysis and comparative risk analysis (the place of values in the world of facts). [9:30 AM-4:30 PM, \$125]

Molecular Biology for Risk Assessors was organized by Larisa Rudenko, ENVIRON Corporation, and will be taught by Rudenko and William Greenlee, Purdue University. It will provide the risk assessor looking for an intensive update in the field of molecular biology with the tools necessary to understand some of the path-breaking work in mechanisms of carcinogenesis and toxicity. Organized into two sessions, the first will present the fundamentals of molecular biology, beginning with a review of nucleic acid biochemistry, the organization and replication of DNA, transcriptional regulation, and regulation of translation. The second session will discuss the application of the knowledge and techniques provided by molecular biology in understanding the fundamental processes of the cell, with integration at all levels of organization (i.e., tissue, organ, whole animal). The goal is to use informa-

tion gathered from these techniques in providing a biologically-based, mechanistically oriented approach to risk assessment. A reading list and copy of the lecturers' notes will be provided for each registrant. [9:30 AM-4:30 PM, \$125]

Risk Communication Workshop: An Introduction to the Principles of Risk Communication will be taught by Andy Schwarz of Temple, Barker, and Sloane, and was organized by James R. Cole of the U.S. EPA Office of Policy, Planning, and Evaluation. Workshop participants will be introduced to the principles of communicating about the risks from chemicals, especially at the community level. The various purposes and aspects of risk communication will be presented using case studies. A number of communication options will be discussed and guidelines will be provided for more effective communication about environmental risks. Since many of those attending the Annual Meeting are potential risk communicators or contributors to those who make public appearances and pronouncements about risk, the target audience for this workshop is broad. [1:00 PM-5:00 PM, \$75]

Workshop on Dietary Exposure Assessment Including Hands-on Training Using Selected Dietary Exposure Analysis Software will be taught by Barbara Petersen and Bob Tomerlin, Technical Assessment Systems, Inc., Washington, D.C. Topics will include a review of existing databases of food consumption estimates; publicly available estimates of residues of toxic substances in food and methods for utilization of residue data; methods and models for estimating dietary exposure, including per capita, per user, and distributional analysis techniques and criteria for selection of the appropriate model; analysis of the foods contributing most to exposure; and case studies, including "hands on" training, using selected food consumption data and software. [1:00 PM-5:00 PM, \$75]

Habicht, Evans Are Luncheon Speakers

F. Henry Habicht II, Deputy Administrator of the U.S. Environmental Protection Agency (EPA), and The Honorable Daniel J. Evans, former Governor and U.S. Senator for the State of Washington, will be the featured speakers at the SRA 1991 Annual Meeting luncheons on Tuesday and Wednesday, respectively.

F. Henry Habicht II

F. Henry Habicht II has been the EPA Deputy Administrator since May 1989 and has been involved in environmental issues since 1981. From 1981 to 1987, he served in the U.S. Department of Justice and from 1984 to 1987 was Assistant Attorney General and director of the Land and Natural Resources division, which handles all federal government litigation concerning environmental, energy, and land and resource management matters. During his tenure at Justice, the number of civil and criminal environmental enforcement prosecutions more than doubled. In earlier government service, he was Deputy Assistant Attorney General for one year and special assistant to Attorney General William French Smith for two years.

Habicht is an alumnus of Princeton University and has a law degree from the University of Virginia. He has worked in the Washington, DC office of the Chicago law firm Kirkland and Ellis and as counsel to the Seattle law firm Perkins, Coie. He also was vice president of William D. Ruckelshaus Associates, Washington, DC, with responsibility for project management and compliance and regulatory counseling on environmental, natural resource, and energy issues, with emphasis on the development of safe, effective, and efficient technologies in waste management, pollution control, and energy development.

Habicht formed and chaired the National Environmental Enforcement



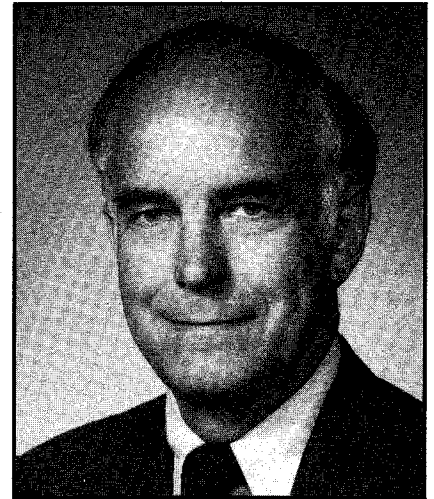
F. Henry Habicht II

Council, established to promote coordination of federal and state environmental enforcement action, and was involved in the legislative reauthorization of several important pollution control laws.

Daniel J. Evans

Daniel J. Evans began his career in 1949 in the practice of structural engineering, holding positions with the City of Seattle (1949-51) and Associated General Contractors (1953-60) and entering private practice as a partner with Gray and Evans (1961-65). He was named "Engineer of the Year" for Washington State in 1965. Evans also served as a member of the Washington State House of Representatives from 1956 to 1965, when he was elected governor of the State of Washington. Before leaving office in 1977, he was named "One of Ten Outstanding Governors in the 20th Century" by a University of Michigan study.

From 1977 to 1983, Evans was president of The Evergreen State College, Olympia, Washington, during which time (1981-83), he also chaired the Pacific Northwest Electric Power



Daniel J. Evans

and Conservation Planning Council that created a 20-year electric power plan for the Pacific Northwest and a concurrent fish and wildlife enhancement plan. In 1983 Evans was appointed to fill the U.S. Senate seat of the late Senator Henry Jackson and later was elected to fill the remainder of the term (through 1989). He chose not to seek a second term. In 1989 he became a fellow in the Institute of Politics, Kennedy School of Government, Harvard University.

Since 1989 Evans has been chairman of Daniel J. Evans Associates, chair of the National Academy of Sciences Commission on Policy Options for Global Warming, a political commentator for KIRO-TV in Seattle, and co-chair of the Washington Wildlife and Recreation Coalition. He also is a member of several boards and other organizations.

Evans has BS and MS degrees in civil engineering from the University of Washington, nine honorary doctor of law degrees from various colleges and universities, and an honorary doctor of engineering from Worcester Polytechnic Institute.

Apostolakis and Fisher to Receive SRA Outstanding Service Awards

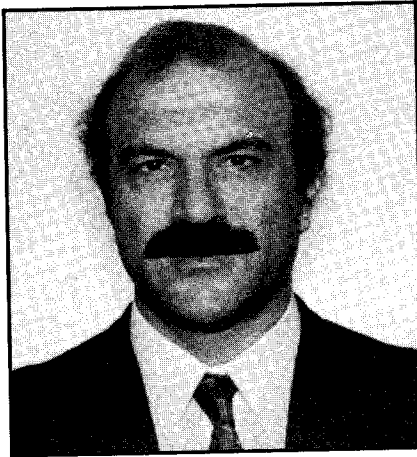
Vincent T. Covello, chairman of the SRA Awards Committee, has announced that George Apostolakis and Ann Fisher have been chosen to receive the Society's Outstanding Service Awards for 1991. The presentations will be made at the business meeting during the SRA Annual Meeting in Baltimore.

George Apostolakis

George Apostolakis is a professor of engineering and applied science in the Mechanical and Nuclear Engineering Department at the University of California, Los Angeles (UCLA). He receives the Outstanding Service Award for his many years of service to the Society, which began when he became a charter member. After first being nominated in 1983, he was elected to the SRA Council in 1987, serving through 1990. He is also a founding member, past president, and currently councilor of SRA's Southern California Chapter.

In 1988, Apostolakis proposed that the Society organize an International Conference on Probabilistic Safety Assessment and Management (PSAM) to be hosted by the Southern California Chapter. After two full years of planning by Apostolakis and his committees, the conference was held in Beverly Hills, California, in February 1991. Attended by approximately 500 professionals from several countries, it was the first conference on the use of probabilistic methods to deal with safety issues in major technological systems and processes, such as nuclear plants, chemical and petroleum facilities, defense systems, aerospace systems, and the treatment and disposal of hazardous wastes. Prior to the conference, Apostolakis edited and produced a two-volume set of proceedings which were available at the meeting.

Apostolakis received a PhD in engineering science and applied mathematics from the California Institute of Technology in 1973. In addition to probabilistic risk and reliability assess-



George Apostolakis

ment, his research activities include fire risk assessment, expert systems, nuclear reactor safety, software safety, and hazardous waste disposal. He has edited two books and published over 50 papers and is currently the principal investigator of two major research projects at UCLA. The first, sponsored by the Nuclear Regulatory Commission, deals with the inclusion of organizational/managerial factors in probabilistic safety assessments of nuclear reactors. The second, sponsored by the National Aeronautics and Space Administration, aims at defining experiments to be conducted on earth and in space which would allow the development of models for the assessment of risk due to fires in manned spacecraft.

Apostolakis was a member of the committee that reviewed the Nuclear Regulatory Commission's Probabilistic Risk Assessment Study, known as NUREG-1150, and also of the National Research Council Committee that assessed safety issues in the Department of Energy's (DOE) nuclear reactors in light of the Chernobyl accident. He is currently a senior consultant to the DOE New Production Reactor Office, as well as editor-in-chief of the international journal *Reliability Engineering and System Safety* and a member of the editorial boards of the *Fire Safety Jour-*



Ann Fisher

nal and the journal *Process Safety and Environmental Protection*.

Ann Fisher

Ann Fisher is currently at Pennsylvania State University, University Park, Pennsylvania, where she accepted a joint appointment between the Environmental Resources Research Institute and the Department of Agricultural Economics and Rural Sociology in September 1990. Also a charter member of the Society, Fisher was elected to a three-year term on the SRA Council in 1990. She was general meeting and program co-chair for the 1990 Annual Meeting, organizing and chairing five Risk Communication Roundtable sessions, and has helped to organize similar sessions for the 1991 Annual Meeting. She also serves on the editorial board of *Risk Analysis: An International Journal*, and this year has been nominated president-elect for 1991-92 [see page 11].

Fisher holds a BA in mathematics and an MA and PhD in economics, all from the University of Connecticut. Her current research interests include: how risk perceptions change in response to new information; how to communicate effectively about small risks (such as microbial contamination or pesticide residues in food, nitrates in ground water, radon in homes, lead in drinking

water, or air toxics in a community); how to evaluate the effectiveness of information programs compared with traditional regulatory programs; how to assign values to small changes in small risks, especially risks of mortality or morbidity; and how to measure both use values and non-use values of non-market goods ranging from ground water

or marshes to unique ecosystems. She also serves on the editorial board of the *Journal of Environmental Economics and Management*.

Fisher taught economics at the State University of New York, College at Fredonia, for nine years. From 1980 to 1987 she analyzed the benefits of envi-

ronmental regulations at the U.S. Environmental Protection Agency (EPA) and from 1987 to 1990 managed the EPA Risk Communication Program, encouraging risk assessors at EPA to provide most likely estimates for benefit analyses rather than just worst case estimates (which tend to overstate expected benefits).

North Assumes Presidency

(Continued from Page 1.)

"The strength of SRA lies in its membership, and it is through the activities of SRA's members that the Society will have its greatest influence. We should seek growth simultaneously in the quality, quantity, and breadth of these activities."

SRA's new president is principal and senior vice president with the consulting firm of Decision Focus Incorporated, Los Altos, California, as well as consulting professor in the Department of Engineering-Economic Systems at Stanford University. His professional interests include decision analysis, risk assessment and management, research and development planning, public policy analysis, analysis of environmental impacts, and modeling of complex engineering, economic, and ecological systems.

SRA Activities. North has been an active member of SRA for nearly a decade, serving as a member of the Council from 1986 to 1989 and as the first president of the Northern California Chapter. He is also a member of the editorial board of the Society's journal, *Risk Analysis*.

As president-elect, he has served as chairman of the 1990-91 SRA Annual Meetings Committee and is general chairman of the 1991 Meeting.

Education and Early Career. After obtaining his BS degree in physics at Yale University in 1962, North received three degrees from Stanford University—an MS in physics in 1963, an MS in mathematics in 1966, and a PhD in operations research in 1970. Working at SRI International from 1967 to 1977, he was involved in a number of major U.S. government consulting projects related to fossil and nuclear energy, synthetic fuels, biological contamination from interplanetary space missions, wildland fire protection, hurricane modification, defense information-gathering resources, and the

National Caries Program. He also worked with the government of Mexico on the development of an expansion model for that country's electric utility capacity.

Present Activities. North became a consulting faculty member in Stanford's Department of Engineering Economic Systems in 1976. He has taught a graduate course in environmental risk analysis, participated in many university research projects and seminars, and served as associate director of Stanford's Center for Risk Analysis.

In 1977 North and several colleagues founded the consulting firm of Decision Focus Incorporated (DFI). At DFI he has continued an active consulting practice in numerous projects for government agencies and private corporations. These projects have included studies on the health effects of sulfur dioxide emissions, acid deposition, ambient air quality, water quality, and hazardous waste; risk assessments and analysis of regulatory strategies for toxic chemicals; and analysis of R&D strategies and environmental impacts of energy technologies. One project in which he takes particular pride is his work on a Superfund site that was dedicated last spring as a county park. This is believed to be the first instance in which a Superfund site has been transferred into public recreational use. North is currently working for the national power authority of Mexico on a strategy for controlling sulfur dioxide emissions from Mexico's electric power plants.

EPA SAB Committees. Since 1979, North has served as a member of various committees of the Science Advisory Board of the U.S. Environmental Protection Agency, including the Subcommittee on Risk Assessment (1979-82), the Environmental Health Committee (1982-1990, vice chair 1985-1990), and the Global Climate Subcommittee (chair, 1988-89) that reviewed EPA's two reports to Congress on global climate. North has also served as a consultant to the Clean

Air Scientific Advisory Committee, and he has participated in SAB reviews of the 1986 carcinogen risk assessment guidelines, the EPA integrated environmental management program, and the hazard ranking system for Superfund.

NRC/NAS Studies. North has also participated in numerous studies by the National Research Council of the National Academy of Sciences dealing with risk issues, including serving on the committees that wrote *Risk Assessment in the Federal Government: Managing the Process* (1983) and *Improving Risk Communication* (1989). As a member of the Committee on Risk Assessment Methodology, he helped to organize an NAS workshop on ecological risk assessment in February 1991. Recently he was appointed to the NAS Committee on Risk Assessment of Hazardous Air Pollutants, which will carry out a mandate by Congress in the Clean Air Act Amendments of 1990 (see page 8).

Nuclear Waste Technical Review Board. In 1989, North was appointed by President Reagan and in 1990 reappointed by President Bush to the Nuclear Waste Technical Review Board, an independent federal agency established by Congress in 1987 for oversight of the Department of Energy's program to characterize Yucca Mountain, Nevada as a potential repository for the nation's spent nuclear fuel and high-level nuclear waste. North serves as chair of the Risk and Performance Analysis Panel of the NWTRB.

Proposition 65 Panel. From 1987 to 1989 North was a member of the Governor's Scientific Advisory Panel for California's Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986).

North's recent publications include articles in *Risk Analysis* ("Risk Analysis: Where Have We Been? Where Are We Going?") and *EPA Journal* ("Do We Know Enough to Take a Risk-Based Approach?").

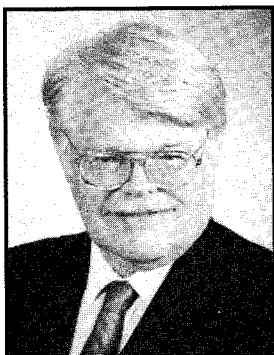
Committee on Risk Assessment of Hazardous Air Pollutants Begins Work

When Congress adopted the Clean Air Act Amendments of 1990, it wrote into the law a mandate for the National Academy of Sciences (NAS) to review methodologies currently used by the Environmental Protection Agency (EPA) to determine human health risks from air pollutants and to offer recommendations for improving procedures. As required by the Act, the report is to be completed by May 15, 1993.

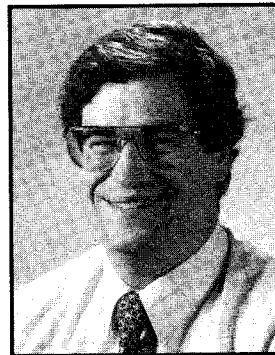
A committee of experts has been organized under the National Research Council's Board on Environmental Studies and Toxicology to provide EPA with the guidance Congress requested. Called the Committee on Risk Assessment of Hazardous Air Pollutants, it is chaired by Kurt Isselbacher, Mallinckrodt Professor of Medicine at Harvard Medical School and Director of the Cancer Center at Massachusetts General Hospital. Isselbacher formerly chaired the Institute of Medicine's (IOM) Food and Nutrition Board during the time it proposed revisions to the Recommended Dietary Allowance (RDA) guidelines. He is a member of both NAS and IOM and recently served on the NAS Governing Board.

The Committee is charged with reviewing techniques used by EPA to assess not only the risk of cancer from exposure to air pollutants but also the risk of other health effects, such as birth defects and reproductive dysfunctions. The Committee's report, to be submitted to EPA, House and Senate committees, and the newly formed *Risk Assessment and Management Commission* (see page 9), will be available to assist the Agency in responding to the residual risk requirements of the Act. EPA must develop regulations that would require emitters of hazardous pollutants listed in the law to install "maximum achievable control technology" to reduce emissions.

The Committee's task is enormous: there are some 750 categories and subcategories of sources for the 189 pollutants. Once control technology is installed, the EPA is required to esti-



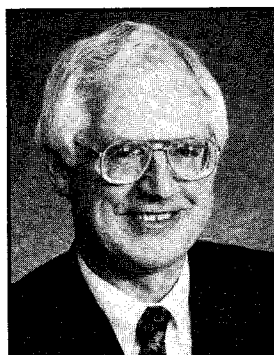
John C. Ballar III



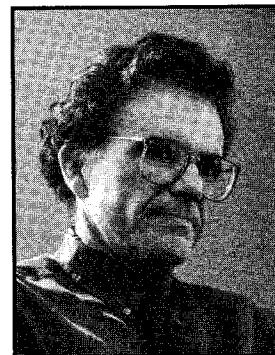
Kenneth T. Bogen



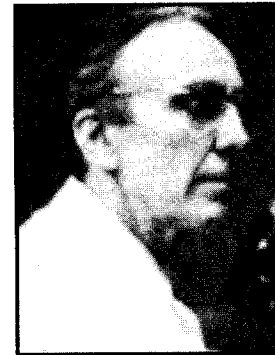
Adam M. Finkel



Roger O. McClellan



Joseph V. Rodricks



Arthur C. Upton

mate the "residual risk"—the extent of health risk from the remaining emissions—and to determine whether additional controls are needed.

Among issues the Committee will address are how to deal with uncertainty, emission and exposure characterization, threshold vs. non-threshold toxicity, extrapolation from high-dose animal tests to low-dose human exposure, complex mixtures of pollutants, and interactions among pollutants.

The Committee will hold a public session from 10 AM until noon on November 1 at the board room of the National Academy of Sciences building in Washington, DC to solicit comments from interested parties on EPA's current procedures in risk assessment methodology for hazardous air pollutants. (Because of space limitations, only registered speakers and reporters may attend the session [deadline for registration was October 21].)

Of the 24 persons appointed to the committee, seven are members of the Society for Risk Analysis, as follows:

John C. Ballar III, professor in the Department of Epidemiology and Biostatistics, McGill University School of Medicine, Montreal, Canada; and Science Advisor, Office of Disease Prevention and Health Promotion in the Department of Health and Human Services, Washington, DC. He received training as a medical doctor and in statistics, has held positions at the National Cancer Institute and Harvard University, and served as statistical consultant to the *New England Journal of Medicine*. His current interests include the methods and processes of risk assessment, evaluation of progress against cancer and other diseases, and standards of professional conduct for scientists.

Kenneth T. Bogen, environmental health scientist with the Biomedical and Environmental Research Program, Lawrence Livermore National Laboratory, Livermore, California (managed by the University of California). With training in environmental health sciences and science policy, he previously has worked in the Congressional Research Service of the U.S. Congress and the EPA's Office of Radiation Programs and is

the author of *Uncertainty in Environmental Health Risk Assessment*. Bogen's primary research focus has been on improving methods used for assessing cancer risks posed by chemicals in the environment, for characterizing uncertainty and interindividual variability in such assessments, and for experimental determination of dermal absorption of volatile organic compounds present in water.

Adam M. Finkel, Fellow at the Center for Risk Management, a division of Resources for the Future, Washington, DC. He currently directs the Center's Program on Rational Risk Reduction. His academic background is in environmental health sciences, and he has worked as technical advisor to several federal and state environmental agencies, the House Science and Technology Committee, the NAS, and an environmental group in Mexico City. He was also editor-in-chief of the weekly "Hazardous Materials Intelligence Report" in 1980-83. Finkel's primary research interests are the strengths and limitations of quantitative risk assessment, particularly regarding human interindividual variation in susceptibility and exposure, and professional responsibility issues arising in risk assessment and management.

Roger O. McClellan, president of the Chemical Industry Institute of Toxicology, Research Triangle Park, North Carolina. He is an advocate of the use of a risk assessment orientation to integrate existing information for risk management and public policy decisions and to identify data gaps and prioritize research needs. He is a member of the Institute of Medicine, past chair of the NAS/NRC Committee on Toxicology, and currently serves as chair of EPA's Clean Air Scientific Advisory Committee. His research is in the area of occupational and environmental exposure standards for air pollutants.

D. Warner North, principal with Decision Focus Incorporated, Los Altos, California; consulting professor in the Department of Engineering-Economic Systems at Stanford University; and 1991-92 president of SRA. (See page 1 for picture and biographical sketch.)

Joseph V. Rodricks, founding principal of ENVIRON Corporation, Arlington, Virginia; and an associate professor of chemistry at the University of Maryland. He has been the director of the Life Sciences Division at Clement Associates and held several positions in the U.S. Food and Drug Administration. Rodricks' professional experience includes preparing exposure and risk assessments on numerous industrial chemicals, environmental pollutants, color and food additives, and pesticides; developing new methodology and evaluating health risks associated with toxic and mining waste disposal sites (including several Superfund sites); and providing expert consultancy to various government organizations, trade associations, and private firms.

Arthur C. Upton, professor and chairman of the Department of Environmental Medicine in the School of Medicine; and di-

rector of the Institute of Environmental Medicine at New York University. As a medical doctor specializing in pathology, he has held positions at the University of Michigan, Oak Ridge National Laboratory, State University of New York at Stony Brook, and Brookhaven National Laboratory and was director of the National Cancer Institute in 1977-79. He is a member of numerous committees, commissions, and advisory boards for several institutions and national and international organizations, including the Institute of Medicine and the Task Force on Risk Analysis of the American Association for Engineering Societies.

Other members of the committee are:

Kenneth B. Bischoff, Unidel Professor of Biomedical and Chemical Engineering, University of Delaware, Newark.

John L. Brauman, JG Jackson-CJ Wood Professor of Chemistry, Stanford University, Stanford, CA.

David D. Doniger, Senior Attorney, National Resources Defense Council, Washington, DC.

John Doull, Professor of Pharmacology and Toxicology, University of Kansas Medical Center, Kansas City, KS.

Phillip K. Hopke, Robert A. Plane Professor of Chemistry, Clarkson University, Potsdam, NY.

Sheila S. Jasanoff, Associate Professor, Program on Science, Technology and Society, Cornell University, Ithaca, NY.

Paul J. Lloy, Professor of Environmental & Community Medicine and Chief, Exposure Measurement & Assessment Division, UMDNJ-Robert Wood Johnson Medical School, Piscataway, NJ.

Lincoln E. Moses, Professor of Statistics and Biostatistics, Stanford University, Stanford, CA.

Craig N. Oren, Associate Professor of Law, Rutgers School of Law, Camden, NJ.

Edo D. Pellizzari, Vice President, Research Triangle Institute, Research Triangle Park, NC.

Armistead G. Russell, Associate Professor of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA.

James N. Seiber, Associate Dean for Research, College of Agricultural and Environmental Science, University of California, Davis, CA.

Steven N. Spaw, Executive Director, Texas Air Control Board, Austin, TX.

John Spengler, Professor of Environmental Health and Director, Exposure Assessment and Engineering Program, Harvard School of Public Health, Boston, MA.

Bailus Walker, Dean, College of Public Health, University of Oklahoma, Oklahoma City, OK.

Rebecca T. Zagraniski, Assistant Commissioner, State of New Jersey Department of Health, Trenton, NJ.

Risk Assessment and Management Commission Established by Clean Air Act Amendments

The Clean Air Act Amendments of 1990, Section 303, established a Risk Assessment and Management Commission, "which shall make a full investigation of the policy implications and appropriate uses of risk assessment and risk management in regulatory programs under various Federal laws to prevent cancer and other chronic human health effects which may result from exposure to hazardous substances." The Commission must begin its work no later than May 1992 (which is 18 months after the date of enactment of the Amendments) and will be composed of ten members who have knowledge or experience in the fields of risk assessment or risk management, including three members to be appointed by the President of the United States; two members, by the Speaker of the House of Representatives; one member, by the Minority Leader of the House; two members, by the Majority Leader of the Senate; one member, by the Minority Leader of the Senate; and one member by the President of the National Academy of Sciences. [Ed. note: RISK newsletter staff is following these appointments and plans to publish them in the next issue after they are announced.] The Administrator of the Environmental Protection Agency (EPA) and the heads of all other departments, agencies, etc., of the executive branch of the Federal Government will assist the Commission in gathering information. The Commission may contract nongovernmental entities to perform research or investigations and request that personnel from EPA or other Federal agencies be temporarily assigned to help in the conduct of the study. Public hearings, forums, and workshops may be held to enable full public participation.

A report on the Commission's studies and investigations will be made public not later than May 1995 and submitted to the President by November 1995, and the Commission will cease to exist not more than nine months after the submission of that report. [Ed. note: This commission is to review the report of the NAS/NRC Committee on Risk Assessment of Hazardous Air Pollutants; see page 8.]

Paul Slovic, Baruch Fischhoff Receive SRA 1991 Distinguished Contribution Awards

SRA members Paul Slovic and Baruch Fischhoff, former colleagues at Decision Research in Eugene, Oregon, have been named recipients of the Society's 1991 Distinguished Contribution Awards for their pioneering work in developing ways to study the perception of risks. Because of their research, risk managers understand better the conflicts in society on risk issues, particularly those associated with technology.

Slovic and Fischhoff began their joint research program in 1975, together with Sarah Lichtenstein, also at Decision Research, and first reported on it in the milestone paper "Cognitive Processes and Societal Risk Taking." Published in *Cognition and Social Behavior*, (J. S. Carroll and J. W. Payne [editors], Erlbaum, Potomac, MD), the article was the first of a series of papers describing collaborative studies of the three associates over an approximately 12-year period.

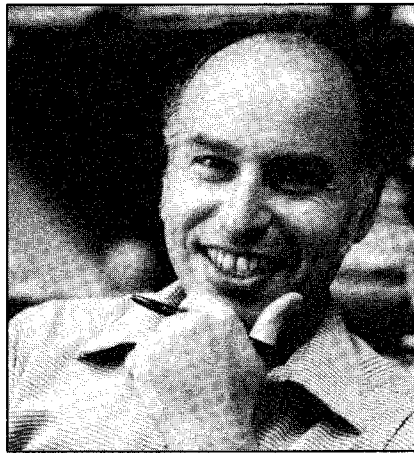
The joint study of cognitive processes and technological risk taking evolved from earlier research on human response to natural disasters begun after Geographer Gilbert White inquired whether studies on decision making under risk could provide insight into puzzling human behaviors he had observed with respect to flood risks. Later discovering Chauncey Starr's 1969 article on "Social Benefit and Technological Risk," the researchers began to focus on society's perception of technological risks.

In addition, Slovic and Fischhoff have each performed a large body of independent research in the areas of judgment, decision making, risk perception, risk assessment, and risk management.

Paul Slovic

Slovic is president of Decision Research and a professor in the Department of Psychology at the University of Oregon. A charter member of SRA, he served both as a councilor (1981-85) and as the Society's third president (1983-84).

Slovic received a BA degree in psychology from Stanford University in 1959 and MA and PhD degrees from the University of Michigan in 1962 and 1964. From 1964 to 1976 he was a research associate at Oregon Research Institute, during which time he spent a year (1973-



Paul Slovic

74) as a Fulbright Scholar at The Hebrew University in Jerusalem. While there, he met Fischhoff, a student of Daniel Kahneman and Amos Tversky, whose work on heuristics and biases in probabilistic thinking was another major stimulus to research on perceptions of risk.

Two years after Slovic returned to Eugene, he, Fischhoff, and Lichtenstein founded Decision Research, a private research institute. In 1986, Slovic was named president of the company.

Throughout his career, Slovic has been a consultant and/or study committee member for numerous private and government organizations. In recent years, he has been an advisor to the World Health Organization in Geneva, a member of the Board of Scientific Directors of the Risk Sciences Institute of the International Life Sciences Institute, a member of the executive board of the Society for Judgment and Decision Making, and a consultant to the EPA's Science Advisory Board and to Ciba-Geigy Ltd. in Basel, Switzerland (regarding the perception and communication of risks from pharmaceutical drugs). He is also a member of the Institute for Risk Research at the University of Waterloo, the National Council on Radiation Protection and Measurements, the Board of Governors of the National Institute for Environmental Health and Safety of the National Safety Council, a MacArthur Foundation study group on mental health and the law, and the Advisory Committee for the Center for Risk and Decision

Processes at the University of Pennsylvania. In addition, he serves on the editorial boards of several journals.

A fellow of both the American Psychological Association and the American Association for the Advancement of Science, Slovic's honors include a 1986-87 John Simon Guggenheim Memorial Fellowship and the Clifford D. Spangler Award for Outstanding Article 1977-87 from the Alpha Kappa Psi Foundation of the American Risk and Insurance Association. His current research interests are examining perceptions of nuclear power, the dynamics of risk and trust, intuitive toxicology, and the evaluation of damages to the environment.

Baruch Fischhoff

Fischhoff is both a professor of social and decision sciences and a professor of engineering and public policy at Carnegie Mellon University, a dual appointment he has held since 1987. He received a BS degree in mathematics from Wayne State University in 1967, after which he became a member of Kibbutz Gal-On and Kibbutz Lahav in Israel. In 1972 and 1975 he received MA and PhD degrees in psychology from The Hebrew University of Jerusalem.

In 1974 Fischhoff joined Slovic as a research associate at the Oregon Research Institute. In 1976 he cofounded Decision Research and remained there until 1987. During this period, he spent a year (1981-82) as a visiting scientist in Cambridge, England (at the Medical Research Council/Applied Psychology Unit) and a year (1982-83) as a visiting scientist at the University of Stockholm. From 1975 to 1987, he was also a visiting associate professor in the Department of Psychology at the University of Oregon, and from 1984 to 1990, a research associate of the Eugene Research Institute in Eugene, OR.

Since 1977 Fischhoff has served as a consultant to many organizations, and is currently a consultant to the Resource Damage Assessment Center of the National Oceanographic and Atmospheric Administration, the World Wildlife Fund/Conservation Foundation, WGBH in Boston, the Association of Science and Technology Center, and several private companies. In addition, he is a member

of the National Research Council Committee on Human Dimensions of Global Environmental Change, and a member of the Advisory Committee on the Resolution of Ethical & Legal Conflicts to the ATSDR/NIOSH/MIT Project on Community Monitoring for Exposure to Toxic Substances & Associated Risks to Health. He is also president of the Society for

Judgment and Decision Making, and serves on advisory boards of youth research projects at Georgetown University and Pennsylvania State University.

In 1990 Fischhoff received the American Psychological Association's Award for Distinguished Contribution to Psychology in the Public Interest, and in 1989 his 1975 paper "Hindsight: Think-

ing Backwards?" was selected for inclusion in *The Best of Psychology Today* (New York: McGraw-Hill, 1990). He also received the Alpha Kappa Psi Spangler Award for Outstanding Article 1977-87.

Fischhoff's current research includes risk communication, adolescent decision making, evaluation of environmental damages, and insurance-related behavior.

SRA Officers To Be Announced

Ballots for the election of SRA's president-elect, secretary, treasurer, and three council members for 1991-92 were due at the Secretariat on October 4, and the results will be announced during the business meeting at the forthcoming SRA Annual Meeting.

The new officers will serve on the SRA Council with D. Warner North, 1991-92 president; Curtis Travis, 1990-91 president; and six councilors still serving their three-year terms of office: R.A. Cox, Peter Barton Hutt, Roger E. Kasperon, Ann Fisher, Saburo Ikeda, and David B. McCallum.

President-Elect

The candidates for the president-elect are Ann N. Fisher and James D. Wilson.

Ann Fisher is a charter member of SRA. She was the general meeting and program co-chair for the 1990 Annual Meeting in New Orleans, was elected SRA councilor in 1990, and serves on the editorial board of the SRA journal, *Risk Analysis: An International Journal*. She holds a joint appointment between the Environmental Resources Research Institute and the Department of Agricultural Economics and Rural Sociology at Pennsylvania State University (see also page 6).

Jim Wilson joined SRA in 1984 and was elected as a councilor in 1988. He has also chaired the Society's Liaison Committee since 1986. He has been with Monsanto Company in St. Louis, Missouri, for 25 years, currently as Regulatory Management Director, Risk Assessment, in the Corporate Environmental, Safety, and Health Staff. While on leave from Monsanto in 1989-90, he was vice president of science policy for the American Industrial Health Council.

Secretary

The SRA secretary is elected to a two-year term. The nominees are Stephen L. Brown and Vlasta Molak, who is running for a second term.

Stephen Brown joined SRA in 1982, later serving the National Capital Area Chapter as its 1989-90 president and currently as a councilor. He is a principal at ENVIRON Corporation, specializing in exposure assessment.

Vlasta Molak has been an SRA member since 1985 and was appointed the international coordinator of SRA in 1987. In 1989 she organized the Society's International Communication Network and also was elected SRA secretary. She is founder and president of Biotechnology Forum, Inc., in Cincinnati, Ohio.

Treasurer

The nominees for treasurer, which is also a two-year term, are Raymond F. Boykin, who is running for a second term, and Fred D. Hoerger.

Ray Boykin is a charter member of SRA. For the 1984 and 1989 Annual Meetings, he was the general program chair and a general meeting co-chair, respectively, and in 1989 he was elected treasurer of the Society. Boykin joined the faculty of California State University, Chico, in 1986 and is a professor of management science and director of the Center for Risk Management. He is also a senior associate consultant with PLG, Inc.

Fred Hoerger became a member of SRA in 1985, was chair of the SRA Grants and Gifts Committee in 1988 and 1989, and received an SRA Distinguished Service Award in 1988. He is retiring from the position of Regulatory and Policy Consultant, Health and Environmental Sciences, for The Dow Chemical Company in Midland, Michigan.

Councilors

The three councilors, whose terms will extend to 1994, will be elected from six nominees paired as follows: Donald G. Barnes vs. Gordon W. Newell; Adam M. Finkel vs. John D. Graham; and Yacov Y. Haimes vs. Rae Zimmerman.

Donald Barnes is a charter member of SRA and staff director of the U.S.

Environmental Protection Agency's Science Advisory Board. He is a member of EPA's RA Council and its RA Forum and has been active in incorporating RA into environmental education.

Gordon Newell was a member of the Steering Committee that led to the formation of SRA and served as the Society's first treasurer. His recent positions include Senior Program Manager, Health Studies, Electric Power Research Institute; and associate executive director, Board on Toxicology and Environmental Health Hazards, National Research Council of the National Academy of Sciences.

Adam Finkel has been a participant or session chair in SRA annual meetings since 1985, was elected secretary of the National Capital Area Chapter for 1989-91, and is on the editorial board of the SRA journal. Since 1987 he has been a fellow at the Center for Risk Management, Resources for the Future.

John Graham is a charter member of SRA and a member of the editorial board of the SRA journal. He is founding director of the Harvard Center for Risk Analysis and director of the Harvard Injury Control Center, as well as associate professor of policy and decision sciences at the Harvard School of Public Health.

Yacov Haimes is also a charter member of SRA, a member of the editorial board of the SRA journal, and chair of the Society's Conferences and Workshops Committee. He is the Lawrence R. Quarles Professor of Systems Engineering and Civil Engineering and director of the Center for Risk Management of Engineering Systems at the University of Virginia, Charlottesville.

Rae Zimmerman, another charter member of SRA, is co-founder and former president of the Metropolitan Chapter, and was social sciences coordinator for the 1984 Annual Meeting. She is a professor of planning at New York University's Robert F. Wagner Graduate School of Public Service. She initiated and directs the NYU Annual Summer Institute in Risk Management in Environmental Health and Protection.

Interest in SRA in Eastern Europe, USSR

During a tour of several Eastern European countries and the USSR in May, SRA International Coordinator Vlasta Molak found considerable interest in SRA.

Prague, Czechoslovakia. In Prague, Molak had meetings at the Ministry for Environment and the Institute for Hygiene and Epidemiology, where engineers and scientists were positive about forming a section of SRA.

Budapest, Hungary. While in Budapest, Molak visited the Regional Environmental Center, a European enterprise run by professionals from Europe and the USA. The U.S. Environmental Protection Agency (EPA) sponsors some of the Center's projects, and Steve Wassersug of the EPA was on assignment to the Center. The Center itself sponsors (through grants) various programs in Poland, Czechoslovakia, Hungary, Yugoslavia, Bulgaria, and Romania. Molak envisions SRA establishing sections in those countries, as well as cooperating directly with the Center.

Kharkov, Ukraine. In Kharkov, Molak represented not only SRA but also the city of Cincinnati, Ohio, as chair of the Environmental Committee of the Cincinnati-Kharkov Sister City Project (see story on page 13). Speaking in Russian, she addressed more than 60 people from universities, research institutes, and numerous new environmental organizations on "The Use of Risk Analysis in Evaluating and Prioritizing Environmental Problems." Her host in Kharkov was Vladimir Piotrovsky, chairman of the City Council's Environmental Commission and formerly a research engineer in environmental controls. He agreed to help form an SRA section in Kharkov and also to assist in organizing an international Conference on Environmental Risk Assessment and Management to be held in Kharkov in May 1992 (see below).

Kiev, Ukraine. Molak was invited to attend a session of the Supreme Soviet of Ukraine in Kiev, where she

found that many of the newly elected representatives are professionals, such as university professors, research engineers, and physicians. At the time (in May), the Supreme Soviet was discussing secession from the USSR because they felt that the federal bureaucracy was preventing them from solving their country's problems. Molak also met the head of the Ukraine Environmental Commission, who asked for help in evaluating agreements the country was making with some American companies for clean-up of problem areas in the Ukraine. Molak feels that providing such support is another potentially important role for SRA.

Moscow, USSR. At the Geography Institute of USSR Academy of Science, Molak met with Boris Ivanovich Kochurov, who gained recognition after publishing an ecological risk map of the USSR. He, too, expressed interest in starting an SRA section in Moscow. (Note: Kochurov had just returned from the U.S., where he had spent time with SRA Councilor Roger Kasperson, Clark University, developing a proposal to produce an ecological risk map of the world. He will return to the U.S. to speak at the 1991 SRA Annual Meeting.)

Zagreb, Yugoslavia. In Zagreb, Molak again spoke to a group of about 40 professionals from university, city government, and environmental organizations (plus an engineer from a large fertilizer company). A roundtable discussion which followed was organized in the Open University by her brother, Branko Molak, who has been active in risk analysis for many years. Branko Molak is also scheduled to speak at the SRA Annual Meeting and has agreed to work on organizing an SRA section in Zagreb; however, this will have to be approached in the face of the turmoil in Yugoslavia.

Molak returned to the U.S. convinced that SRA and individual risk assessors can greatly facilitate East-West communications regarding the solution of the world's environmental problems.

Risk Analysis Conference in Kharkov

An international conference on "Uses of Risk Analysis in Evaluating and Solving Environmental Problems" will be held May 18-22, 1992, at the Kharkov Physical and Technical Institute, Kharkov, Ukraine, USSR. It will be sponsored by The Society for Risk Analysis; Biotechnology Forum, Cincinnati; the U.S. Environmental Protection Agency; the U.S. Department of Commerce; USSR Academy of Sciences; the Regional Environmental Center, Budapest, Hungary; the World Health Organization; and others.

The purpose of the conference is to enable participants worldwide to exchange information and technology dealing with the evaluation and solution of environmental problems, with a special emphasis on East-West, North-

South interactions. The conference is meant to be a prelude to Earth Summit '92 (to be held in Rio de Janeiro, June 1-12, 1992; see page 18) and will deal not only with risk analysis but also with methods and technologies to prevent and control pollution. Exhibitions and demonstrations of those technologies will be presented.

Conferees will gather in Budapest on May 15 for an informal meeting on May 16 at the Regional Environmental Center for Eastern and Central Europe (with site visits, etc.). On May 17 they will travel by chartered plane from Budapest to Kharkov.

For more information on the conference, contact SRA International Coordinator Vlasta Molak (Phone: 513-521-9321).

News from SRA-Japan

The Fourth Annual Conference of SRA-Japan will be held on November 29-30, 1991, 9:30 AM to 5:00 PM, in the auditorium of the Society of Civil Engineering, Japan Yotsuya, Shin-juku, Tokyo. The program will include a special symposium on "Risk Problems of Waste Management," with guest speaker Masaru Tanaka of the National Institute of Public Health and four invited speakers representing academia, regulation, and industry. Also included will be a special session on moral hazards in insurance mechanisms and general sessions relating to risk assessment and management on topics such as cancer risk assessment, risk perceptions in the Japanese context, databases for risk assessment, and risk communication.

The next issue of SRA-Japan's official journal, *Japanese Journal of Risk Analysis*, Vol. 3, No. 1, will be released in October. The contents, written in Japanese with abstracts and table of contents in English, include an editorial on international trends in chemical risk management, several papers which were presented at SRA-Japan's Third Annual Conference, and research communications on the following topics: monitoring heavy metal levels in the environment; effects of climate change on electric utilities; management control for information system risks; civil engineering risk, reliability analysis, and infrastructure planning; and global environment and environment risks in the United States and European communities.

For more information on SRA-Japan, contact: Prof. Saburo Ikeda, Secretary of the SRA-Japan Section, c/o Institute of Socio-Economic Planning, University of Tsukuba, Tsukuba, Ibaraki 305, Japan [Phone 0298-53-5380; FAX 0298-55-3849].

News from SRA-Europe

R.A. (Tony) Cox, Four Elements Limited, London, United Kingdom, has been elected the 1992 president of SRA-Europe, succeeding Pieter Jan Stallen, the section's first president. M. Poumadère, Institut SYMLOG, Paris, France, has been elected the 1993 president.

Other newly elected members of the Executive Committee for SRA-Europe are:

Three-year Terms:

D. Müller, Professional and Regulatory Services, Proctor & Gamble GmbH, Sulzbach, Germany; and

T. Kvaal, Norwegian Petroleum Consultants A.S., Asker, Norway.

Two-year Term:

M. Brüstlein, Lonza A.G., Basel, Switzerland.

One-year Terms:

V. Eremenko, Science and Engineering Centre of Industrial and Nuclear Safety, Moscow, United Soviet Socialist Republic; and

P. Vestrucci, Lab. di Ingegneria Nucleare, Bologna, Italy.

The new committee will take office during the business meeting of the section's Third Annual Conference, which will be held December 16-18 in Paris.

For more information on SRA-Europe, contact the 1991 president: Pieter Jan Stallen, c/o Tooropstraat 34, 6813 KT ARNHEM, The Netherlands [Phone 31-85-437848; FAX 31-85-435310].

USSR/USA Sister City Conference Cites Environmental Problems

A USSR/USA Sister Cities Conference, held in Cincinnati, Ohio, on September 12-15, included an environmental session during which the Soviets expressed concern that public and environmental health in the USSR is in a "pitiful state."

Many of the Soviets had never traveled outside the USSR and were eager to learn about American society. They blamed poor management for their environmental problems, and asked for U.S. advice on how to approach them. The conclusion of the session was that environmental considerations have to be taken into account before new large-scale development starts in the USSR.

Delegates at the conference represented over 60 cities in the USSR and USA. Approximately 300 Soviets and 500 Americans attended the meetings.

As a followup of the conference, the Environmental Committee of the Cincinnati-Kharkov Sister City Project will be hosting six environmental professionals from Kharkov for a two-week visit in November. After an initial stop in Washington, DC, the Soviets will visit various companies and institutions in Cincinnati, exploring the possibility of cooperative projects of interest to municipalities.

The visitors will include: Vladimir Piotrovski, Chairman of the Environmental Commission of Kharkov and a member of the Kharkov City Council; Vladimir Rozhkov, Kharkov Physical and Technical Institute; Pavel Kanilo, Institute for Problems in Machinery; Alexander Feinstein, ENERGOSTAL; Sofia Slobodyanik, Section Chief, Institute Promostoinii Proekt; and Tatyana Zaharchenko, Kharkov Law School.

Chapter News

The Society for Risk Analysis currently has 13 chapters in the United States, and a fourteenth, Michigan Chapter, is expected to receive approval at the forthcoming Annual Meeting. RISK newsletter publishes brief reports from the chapters in each issue, both to ensure that the chapters are aware of each other's activities and to establish a centralized historical record of those activities. For this issue, RISK newsletter received reports from eight chapters.

Greater Pittsburgh Chapter

A half-day symposium in May on "Risks from Exposure to Electric and Magnetic Fields (EMF)" was co-sponsored by the Greater Pittsburgh Chapter and regional chapters of the Society of Toxicology, Health Physics Society, and Air and Waste Management Association. Attended by 50 participants, the symposium included presentations and discussions on exposure, biological effects, and issues of risk, management, and public policy.

In September, **Herbert Rosenkranz**, chairperson of the Department of Environmental and Occupational Health in the Graduate School of Public Health at the University of Pittsburgh, spoke on "A Structure-Activity Based Expert System for Hazard Identification." The next chapter meeting will be in January 1992.

Michigan Chapter

Approximately 110 persons have expressed interest in forming a Michigan chapter of SRA, and each will receive the ballot of nominations for the chapter's first election of officers. The Nominating Committee is chaired by **Rebecca Head** and includes **Ann Marie Gebhart**, **Leyna Mulholland**, **John Nelson**, and **Kathryn Wurzel**.

At its September meeting, the chapter heard five speakers from Michigan State University speak on the following topics: "Risk Communication Overview," **Dan Bronstein**, Resource Development; "Risk Communication and Emergency Response," **Mike Lindell**, Psychology; "Risk Communication and Risk Resolution," **Frank Fear**, Resource Development; "Toxic Use Reduction: An Important First Step after Right-to-Know," **Paulette Stenzel**, Business Law; and "Communicating Food Risks to Consumers," **Sandra Andrews**, Food Science and Human Nutrition. The meeting was planned by the Program Committee, chaired by **Mike Kamrin** and including **Gwendolyn Ball**, **Joan Fassinger**, **Barbara Goodman**, **Daland Juberg**, and **Betty Locey**. During the business meeting that followed, by-laws for the new chapter were discussed and approved. The By-laws Committee is chaired by **Grant Trigger** and includes **Pat Beattie**, **Brad Strohm**, and **Doug Kononen**. **Curtis**

Travis, SRA president, attended the meeting and addressed the chapter after dinner.

New England Chapter

The monthly combined meetings of SRA's New England Chapter and the Boston Risk Assessment Group resumed in September, after a summer respite. Meetings are held in Building E-40, 4th floor conference room, at Massachusetts Institute of Technology, with speakers scheduled in the afternoon and evening. On September 12, **Rob Goble** of Clark University spoke on "Buying Insurance for Global Warming: A Hazard Management Perspective" and **Gay Goodman**, Gradient Corporation, addressed the question "Do Long Term Carcinogenicity Studies in Rodents Overpredict Cancer Risks for Humans?" On October 16, the topics will be "Use of a Streamlined Risk Assessment for 21E Waste Site Assessment and Remediation," by **Michael Murphy** of Massachusetts DEP, and "Distributions for Exposure Variables in Public Health Risk Assessment," by **David Burmaster** of Alceon Corporation. On November 13, **Steve Clough**, ESE, will speak on "Ecological and Human Health Risk Assessment at the IndustriPlex Site in Woburn, Massachusetts," and **Karen Shapiro**, Tellus Institute, will talk on "The Environmental Costs of Glass vs. Plastic Packaging."

Chapter president **Harlee Strauss**, H. Strauss Associates, is initiating plans for a chapter newsletter. The chapter is considering ways to utilize the funds that have grown in its treasury, such as a symposium, invited speaker, membership directory, or taping, transcribing, and publishing its panel discussions.

Northern California Chapter

The Northern California Chapter (NCCSRA) is now organizing a one-day workshop that would serve as an NCCSRA-sponsored forum for California regulatory agencies to present new ideas on cancer modeling. The workshop would benefit NCCSRA members by providing an opportunity to learn about more realistic cancer models and would benefit regulatory agencies by providing a public meeting in which they can propose changes to the regulatory process.

The election of new officers will be held at the October chapter meeting, which will feature a speaker from the newly formed California Environmental Protection Agency (Cal-EPA). The talk will focus on how Cal-EPA will consolidate and integrate risk assessment and risk management activities from the various organizations that have been merged to form it.

Ohio Chapter

Ronald J. Marnicio, president of the Ohio Chapter, reports that the chapter's July meeting—three technical presentations on the theme of ecological and biological risk assessment and an open topic poster session—was attended by approximately 30 people. The meeting was coordinated by the chapter's president elect **Bert Hakkinen**, Procter and Gamble Company, and **Robert Koerker**, Department of Pharmacology and Toxicology in the Wright State University School of Medicine. **Clifford Duke**, an environmental specialist with Advanced Sciences, Inc., spoke about the ecological risk assessment being performed at the Feed Materials Production Center at the U.S. Department of Energy Facility at Fernald. **Allen Burton**, associate professor of biological sciences at Wright State University, addressed the assessment of impacts on aquatic ecosystems. **Larry Lowry**, president of Biological Monitoring Resources and formerly chief of the National Institute for Occupational Safety and Health's Biological Monitoring Laboratory (NIOSH), spoke on the use of biological monitoring in human exposure assessment.

The next chapter meeting will be held in late October/early November in the Cincinnati area. One of the speakers will be **Vlasta Molak**, scientist at NIOSH and SRA national secretary, who will speak about current developments in eastern European countries on international risk analysis initiatives. A subsequent winter meeting on the topic of chemical process industry safety and risk analysis is being planned in the Columbus area.

Philadelphia Chapter

The Philadelphia Chapter's outgoing president, **Branden Johnson** of the New Jersey Department of Environmental Protection, reports that during the past year the

chapter has quadrupled its paid membership, re-established a sound treasury and active mailing list, successfully held three dinner meetings, and elected new officers for 1991-92. They are: president, **Isadore (Irv) Rosenthal**, Risk and Decision Processes Center, University of Pennsylvania; president elect, **Eileen Mahoney**, Mahoney Associates; and secretary/treasurer, **Susan Doering**, ERM, Inc. The councilors are: **Robin Streeter**, ERM, Inc.; **David Stout**, ERM, Inc.; and **Marvin Ziskin**, Department of Diagnostic Imaging, Temple University School of Medicine.

The chapter will continue to use the dinner meeting format for its 1991-92 meetings, which will be held at the Faculty Club of the University of Pennsylvania. On October 1, **Mike Jaycock** of Rohm and Haas spoke on exposure analysis as it applies to product risk analysis. On January 14, **Joe Sweeny** of ARCO Chemical will discuss risk analysis of chemical process hazards. On April 14, **Carol Cunningham** of ERM will address product life cycle analysis.

Chapter Contacts

Columbia-Cascades: Richard Palmer (president), 206-685-2658.

East Tennessee: John Auxier (president), 615-690-3211.

Greater Pittsburgh: Jon Merz (secretary), 412-268-5609.

Lone Star: Ben Thomas (president), 713-520-9900.

Metropolitan: Paul Moskowitz (president), 516-282-2017.

Michigan: Douglas Kononen (founding member), 313-986-1351, or
Richard Schwing (founding member), 313-986-1348.

National Capital Area: Adam Finkel (secretary), 202-328-5110.

New England: Harlee Strauss (president), 508-655-8315.

Northern California: Thomas McKone (secretary), 510-422-7535.

Ohio: Ronald Marnicio (president), 614-761-2008.

Philadelphia: Isadore (Irv) Rosenthal (president), 215-898-9660.

Research Triangle: Deborah Amaral (president), 919-966-6691.

Rocky Mountain: Ralph Grover (president), 303-450-0005.

Southern California: Michael Stamatelatos (president), 619-759-0348.

Research Triangle Chapter

Research Triangle Chapter's fourth annual workshop will be held on October 15, 1991, from 8 AM to 5 PM at the University of North Carolina's newly constructed William C. and Ida Friday Continuing Education Center. The "Ecological Risk Analysis Workshop" will focus on four high-risk ecological problem areas identified in the U.S. Environmental Protection Agency Science Advisory Board's (SAB) September 1990 report *Reducing Risk*: global climate change, stratospheric ozone depletion, habitat alteration and destruction, and species extinction and loss of biological diversity. The principal objective of the workshop is to provide a forum for discussions of the developments in these relatively new applications of risk analysis.

Robert Huggett, director of the Virginia Institute for Marine Studies at the College of William and Mary and member of the SAB's Ecology and Welfare Subcommittee, will be the keynote speaker. For

more workshop information, please contact **Bill Mitchell**, Workshop Chairperson, RTP-SRA, P.O. Box 13753, Research Triangle Park, North Carolina 27709 (FAX 919-489-8825).

The chapter met in September and heard **Ken Rudo** of the Environmental Epidemiology Section of the North Carolina Department of Health and Natural Resources speak on "Risk Assessment and the State Government."

Rocky Mountain Chapter

Approaching the end of its first year, the Rocky Mountain Chapter has grown to include 50 members. Activities have included five meetings with presentations by subject matter experts covering a variety of topics, from risk management at a Superfund site to assessment of risks associated with off-shore drilling and production in the North Sea. A recent breakfast meeting featured a presentation on the U.S. Environ-

mental Protection Agency's Integrated Uptake Biokinetic Model for evaluating potential human health risks from exposure to lead. The dynamic discussion that followed underscored the importance of proper risk assessment techniques in assessing lead exposures and the use of risk analysis in the management and decision process.

Planning for 1992 has already begun with the election of new officers in the early fall. The program committee is planning to sponsor up to eight meetings with presentations covering a wide range of risk analysis issues. Since **Tom Laetz**, the first president of the chapter, accepted an assignment in the U.S. General Accounting Office in Europe and **Ralph Grover** of WASTREN, Inc., former president elect, assumed the presidency, one of the chapter councilors, **Dennis Smith** of EG&G Rocky Flats, Inc., has become the interim president elect. Smith's seat on the council was filled by **Yvette Lowney** of the Gradient Corporation.

Chapters to Meet in Baltimore

The traditional Annual Meeting breakfast for SRA chapter representatives will be held on Tuesday morning, December 10, from 7:15 to 8:30, in the Charles Room of the Hyatt Regency Baltimore. Invitations to the breakfast, at which chapter concerns will be addressed, are being mailed to the chapters by Catherine St. Hilaire, chair of the Chapter Liaison and Relations Committee. Outgoing and incoming Presidents Curtis Travis and Warner North will be present.

1988 Proceedings Update

The proceedings for the 1988 SRA Annual Meeting, held in Washington, D.C., will be available in early 1992. The 779-page volume of 68 papers is entitled *RISK ANALYSIS: Prospects and Opportunities* and was edited by Constantine Zervos, U.S. Food and Drug Administration. The 1988 proceedings may be ordered (for \$45 per copy) from: Plenum Publishing Corp., ATTN: Customer Service Dept., 233 Spring Street, New York, New York 10013.

Travis Heads ORNL Risk Center

A Center for Risk Management has been established at the Department of Energy's (DOE) Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee. Curtis C. Travis, SRA's 1990-91 president, is the Center's director, and Lawrence W. Barnhouse is its deputy director.

The Center will focus the laboratory's resources on evaluating risks to human health and assist in determining priorities and solving environmental problems related to energy production and consumption. It has been established with the support of the Environmental Restoration Program of Martin Marietta Energy Systems, Inc., which manages ORNL and four other DOE facilities.

Environmental restoration is a principal concern of the new Center. Many health and environmental problems of major national or international significance also fall within the scope of the Center's work, as well as issues related to radionuclides, toxic chemicals, acid deposition, and climate change, and the policy and management mechanisms to reduce their adverse impacts. The Center will also emphasize the integration of science into decisionmaking, pursuing activities such as environmental fate/transport modeling, human and environmental toxicology, epidemiology, applied ecology, environmental monitoring, data base development, risk/benefit, and policy analysis. In addition to developing methods and performing assessments, the Center will provide technical assistance to sponsors responsible for performing or interpreting risk assessments and for managing societal risks.

300 Attend Conference

"Regulating Risk: The Science and Politics of Risk," a conference held in Washington, DC, June 24-25, by the National Safety Council, with the ILSI-Risk Science Institute as a cooperating sponsor, was attended by approximately 300 participants.

The opening address, "Definitions of Risk—Managing the Outrage, Not Just the Hazard" was given by Peter M. Sandman, Director of the Environmental Research Program, Rutgers University. The keynote addresses were "Risk Assessment: The Need for a Common Perspective" by D. Allen Bromley, Assistant to the President of the United States for Science and Technology; and "The Environmental Protection Agency [EPA] and Risk: The Next Steps," by F. Henry Habicht II, Deputy Administrator of EPA (see page 5). Consumer advocate Ralph Nader was the featured speaker opening the second day of the conference.

The conference was organized into five panel discussions: risk regulation; the role of science in understanding risk; improving decision making; public perception of risk; and the effect of politics, economics, and perceptions on public policy. A notebook from the conference, which includes the EPA report *Reducing Risk: Setting Priorities and Strategies for Environmental Protection*, is available for \$50 from the National Safety Council's Public Policy Office. A full conference report will be available next year. (To order the notebook or report, contact Stacy Johnson [Phone 202-293-2270].)

An Old Issue Revisited:

Food Irradiation: Does It Really Have a Future?

As this newsletter goes to press, Florida state inspectors are examining the United States' first commercial food irradiation facility prior to the installation of its gamma-ray-emitting cobalt-60 source. The facility has been constructed in the small town of Mulberry, Florida by Vindicators of Florida in spite of intense opposition from Food & Water, Inc., a New York-based consumer advocate group. Sam Whitney, president of Vindicators, says they will irradiate strawberries and mangoes in November and December, with citrus fruits soon to follow.

The decision to build the facility was made by an agriculturally based group of Floridians after ethylene dibromide was banned in 1984 as a post-harvest fumigant. Concluding that irradiation was their only practical alternative, the group has gone public and now has 640 stockholders. They claim to have the support of the food industry; however, *The Boston Globe Magazine* reported last November that a number of leading food companies and the nation's top 13 poultry producers have agreed with

consumer opposition groups not to sell irradiated foods. Moreover, some states have either banned or placed a moratorium on the sale of irradiated foods.

The controversy over food irradiation dates back to 1943 when the Massachusetts Institute of Technology began investigating the process to control insect infestation and spoilage. Twenty years later, in 1963, the U.S. Food and Drug Administration approved the use of irradiation to disinfect wheat and wheat powder, and in 1965 it approved the irradiation of white potatoes to extend their shelf life. In 1966, the FDA began requiring that irradiated foods be labeled as such, and in 1979 it established the Bureau of Foods Irradiated Food Committee (BFIFC) to review safety assessments of irradiated food.

Since 1983, the FDA has added seven more food types to those for which irradiation is permitted, including pork, fresh fruits, and (in May 1990) poultry. Still, the only irradiated food commercially available in the U.S. to date is spices, although irradiated papayas from Hawaii

were successfully test marketed in Los Angeles in 1987 and irradiated mangoes from Puerto Rico were marketed in Miami in 1986. Vindicators will concentrate on fruits, although they expect to irradiate poultry in the future (to destroy salmonella and other bacteria).

The opponents of food irradiation point to the risks involved both to workers in processing plants and to the general public. Irradiation does not make food radioactive, but it does require the transportation, use and disposal of hazardous materials. Also, opponents argue that irradiation masks any spoilage that may have occurred before exposure takes place and/or that it decreases the nutritional value of foods. Finally, radiolytic products are produced in irradiated foods, including some carcinogens and mutagens. While the BFIFC has reported that essentially all of these substances are also found in unirradiated foods, irradiation opponents say that not enough is known about the production and effects of *unique* radiolytic products (URPs) in irradiated food. Advocates counter that food irradiation has been scrutinized more than any other process in the history of food preservation.

The opposition is not confined to the U.S. Although a joint committee of the World Health Organization and the United Nations Food and Agriculture Organization concluded in 1980 that food exposed to a prescribed dose of irradiation is safe for human consumption, and over 30 countries have approved the irradiation of approximately 50 different foods, as late as last January the European Communities (EC) failed to agree on food irradiation. At issue is the labeling of food products containing irradiated foods. At present, EC regulations require that irradiated ingredients making up more than 25% of the contents be labeled, but Italy and Spain insist on a lower limit of 0.5% and Germany and Luxembourg oppose any irradiation at all. At the same time, The Netherlands has been irradiating about 2 tons of food per day, and the Soviet Union has been irradiating 400,000 tons of wheat annually.

Perhaps the most important barrier to food irradiation—at least in the developed countries—is the fact that various well-established technologies make it possible to store and preserve the superabundance of foodstuffs produced by farmers. And, as is always the case, food processors must compare the costs of the various processes as well as consumer acceptance. However, in the underdeveloped countries with fewer options, food irradiation may be viewed more favorably.

Of course, in any country, consumers exhibiting a definite preference for irradiated foods could have a decided impact on whether they become commercially available. In fact, the outcome may be determined almost entirely by the public's perception of the associated risks. Meanwhile, down in Florida, Food & Water, Inc. is attempting to influence that perception. At the same time, Vindicators of Florida is taking a financial risk, which may or may not be vindicated.

Letter to the Editor

Dear Editor:

One of the benefits of membership in SRA with an outlet like RISK newsletter is the opportunity to extrapolate or conjecture, hopefully for the greater good. I hope the following idea is perceived as such.

In recent years the consulting companies, at least in Southern California, have adopted the idea of professional technical employees as "associates." Some companies have even refined the concept so that associates are at-call consultants who work only when there are projects or tasks and receive a billable rate exclusive of fringe benefits or any other company obligation. The conjecture part of my idea is that increasing health insurance premiums, beleaguered retirement funds, and increasing overhead costs for an increasingly dynamic work force may force the consulting companies toward at-call associates as a predominant, preferred manner of conducting business. Will the future configuration of environmental and safety assessment consulting companies be a smaller, lower overhead core group subcontracting with associates on an as-needed basis? Will more and more risk assessors be working in job shops or out of their homes as independent business professionals?

If this conjecture comes true, SRA becomes much more critical to the risk professional. Consider "past" times when society participation was considered optional compared to the benefit of synergistic information transfer up and down the halls of the old heavily staffed office. The "new" world will feature working alone in a library or at home on a PC to fax/modem your results to a technical editor who does a QA review and passes the product on to a project manager who asks for your rewrite via telephone or fax/modem. Time sheets and paychecks will travel by mail. In this new world, SRA would assume a more important role as a meeting place and a critical source of information and technical exchange...RISK RESOURCES, to paraphrase the Southern California Chapter newsletter name. SRA members will be willing to pay more to support this invaluable resource. There will need to be more meetings to meet the consensus demand. Sound too far-fetched? OK, suppose it doesn't happen. Maybe the backward interpolation from such an extrapolation can offer valuable insights into what else we could be doing now.

Sincerely,

Larry R. Froebe
International Technology Corporation
17461 Derian Avenue, Suite 190
Irvine, California 92714
[Phone 714-261-6441; FAX 714-474-8309]

Editor's Note: Froebe is editor of RISK RESOURCES, newsletter of SRA's Southern California Chapter.

Earth Summit '92 in Rio de Janeiro, June 1-12

The first-ever "Earth Summit"—the United Nations Conference on Environment and Development (UNCED)—will take place in Rio de Janeiro, Brazil, at the conference center Rio Centro, June 1-12, 1992. While the UN General Assembly has decided that Member States should be represented at UNCED by heads of state or government, non-governmental organizations (NGOs) and private-sector groups will also be taking part as official observers and, in some instances, as members of the formal national delegations at the Summit. NGOs will also contribute to the UNCED agenda at the Preparatory Committee meetings and Working Group sessions.

Background. The UN has contributed to the understanding of the relationship between economic activity and the environment for more than four decades and particularly since the UN Conference on the Human Environment, held at Stockholm, Sweden, in 1972. (The 20th anniversary of the opening of the Stockholm conference will be observed as World Environment Day on June 5.) In 1987, the UN World Commission on Environment and Development (Brundtland Commission) issued the report *Our Common Future* (Oxford Press), in which the concept of "sustainable development" was introduced. Realizing that concerns for development and the environment were not being integrated in economic planning and decision-making and, moreover, that governments needed to review data from other countries before entering into new international treaties, the UN General Assembly called for a conference that would take steps to reverse trends and establish the basis for a sustainable way of life on the planet as the 21st century approaches. Thus, in December 1989, UNCED was initiated.

National Reports. Each country participating in UNCED will submit a national report to "provide basic information on the existing situation in the country in terms of the interactions between development process and the environment." The U.S. report, prepared by the Council on Environmental Quality (CEQ), will be available to the public in December. (To learn how to obtain a copy of the 250-page report, contact CEQ, 722 Jackson Place NW, Washington, D.C. 20503 [Phone 202-395-5750].)

UNCED Agenda. The UNCED agenda is being planned by a Preparatory Committee (PrepCom), which has met three times since August 1990, and will have its final meeting (PrepCom IV) on March 2-April 3, 1992. Chaired by Tommy Koh, former UN Ambassador from Singapore, the PrepCom meetings are attended by members of the national delegations to UNCED (which include technical experts from national capitals), UN experts on environment and development, and NGO official observers. (NGOs planning to attend PrepCom IV and/or UNCED must receive UN accreditation.)

The issues to be addressed at UNCED include protection of the atmosphere, land resources, freshwater resources, and oceans, seas and coastal areas; environmentally sound management of biotechnology and hazardous wastes (including toxic chemicals); prevention of illegal traffic in toxic products and wastes; improvement in quality of life and human health; and improvement in living and working conditions of the poor by eradicating poverty and stopping environmental degradation. The conference will also look at underlying patterns of development which cause stress to the environment and development issues

such as poverty in developing countries, levels of economic growth, unsustainable patterns of consumption, demographic pressures, and the impact of the international economy.

Expected Results. UNCED is expected to produce: an Earth Charter of basic principles that will govern the economic and environmental behavior of peoples and nations; *Agenda 21*, a blueprint for action which will focus on the next ten years and extend into the 21st century; the means to carry out *Agenda 21* by making available additional financial resources and environmentally sound technologies required for developing countries to participate in global environmental cooperation; an agreement on strengthening institutions in order to implement these measures; and new conventions on climate change, biological diversity, and (perhaps) forestry.

NGO Participation. In addition to PrepCom IV, other events in preparation for UNCED will involve the NGO sector, including: a Global NGO Conference to prepare a position paper for UNCED, Paris, France, December 17-20, sponsored by the Environmental Liaison Centre International, Nairobi, Kenya; and the North American EcoForum, one of several forums organized to provide opportunity for public input in preparation for UNCED, New York City, February 27-28, 1992, sponsored by the Centre for Our Common Future, Geneva, Switzerland.

Concurrent with the Earth Summit, NGOs will hold a '92 Global Forum, which is being organized by the NGO community in Rio and the International Facilitating Committee (IFC). IFC was formed to assist "independent sectors" in participating effectively at UNCED and is based at the Centre for Our Common Future, Geneva. The headquarters and registration for this series of meetings, hearings and forums is at the Gloria Hotel and Conference Center in Rio de Janeiro. [Note: Vlasta Molak, SRA International Coordinator, is organizing an SRA-sponsored workshop for the Global Forum on "The International Role of Risk Analysis in Evaluating and Solving Environmental Problems."]

Contacts. Any NGO or individual from the USA who would like to participate in UNCED or any associated activities and needs assistance may contact the U.S. Citizen's Network on UNCED, a project of the Tides Foundation, San Francisco, California. The non-profit Network was formed in October 1990 "to facilitate the efforts of U.S. organizations trying to affect the Earth Summit process." Those who join the Network (individuals, \$25; organizations, \$50) will receive a monthly newsletter; a directory of organizations in the Network, committees, and working groups; information on the EcoNet computer network, which collects and disseminates information on the issues of UNCED; and access to a special travel package to Brazil for the Summit. The Network also has published a very informative pamphlet, *An Introductory Guide to the Earth Summit: A Window of Opportunity*, which is available for \$2 per copy. For further information, contact: U.S. Citizen's Network on UNCED, 300 Broadway, Suite 39, San Francisco, California 94133 (Phone 415-956-6162; FAX 415-956-0241).

[Editor's Note: Information for this article was obtained from *Notes for Speakers*, published by the UN Department of Public Information, and *An Introductory Guide to the Earth Summit: A Window of Opportunity*, published by the U.S. Citizen's Network on UNCED.]

Doctoral Dissertation Research Improvement Grants

The Decision, Risk, and Management Science Program (DRMS) at the National Science Foundation will continue to award doctoral dissertation research improvement grants to high quality dissertation proposals which develop useful theory or methodology in management science, risk analysis, organizational and individual decision analysis, judgmental processes, behavioral decision making, and pollution prevention. These awards may cover expenses in dissertation work not usually covered by a university. Thus they may be used to fund travel or supplemental equipment, though they may not be used to pay student stipends or tuition. The proposal must be submitted by the student's dissertation advisor with the student listed as co-principal investigator.

DRMS is especially interested in the following types of dissertations:

Application-Relevant Dissertations. These should involve interaction between doctoral students working on an application-relevant problem and those organizations involved in the problem. Since a dissertation is intended to demonstrate a student's capabilities as a researcher, such interactions are expected to enhance the academic quality of the dissertation. A proposal for such a dissertation should include a letter from organizations involved in the actual application, designating individuals who would be willing to help the student in pursuing the dissertation research. Dissertations in such fields as production and operations management, risk, and individual and organizational decision making are encouraged.

Experimental Dissertations. These will cover experimental expenses not covered as part of a student's university enrollment. They might include subject payments, rental of lab equipment, transportation to consult with other experimentalists, and

specialized research equipment or services not otherwise available. Such experiments must be in fields central to the DRMS program.

Further funding may be available through the Decision Sciences Institute (Phone 404-651-4000), the Marketing Science Institute, or the ORSA/TIMS Special Interest Group on Decision Analysis. The Institute of Management Sciences Council is currently considering creating an award for the best applied dissertation. Dissertations with an application-focus are also often eligible for funding from organizations involved in the application.

Decisions on dissertation proposals submitted by January 15 will be announced by July 15; proposals submitted by August 15 will be announced by the following January 15. More information about the nature of dissertation improvement grants, applicant eligibility and proposal and grant processing is provided in the brochure *Grants for Improving Doctoral Dissertation Research* (NSF 89-32). (Special attention should be paid to allowable and non-allowable expenses in that brochure.)

DRMS funding for dissertation improvement grants generally does not exceed \$7500. Such grants must list the doctoral student's faculty advisor as the principal investigator and the student as co-principal investigator. While the student is encouraged to consult the DRMS program officers on general informational matters, all communications regarding the status of the proposal can be made only by the advisor.

For more information, please contact Bob Bordley, Program Director, DRMS/SES, National Science Foundation, 1800 G Street, N.W., Washington, D.C. 20550.

Comings & Goings

Wayne Tusa is president of the new firm Environmental Risk and Loss Control, Inc. ERLC's primary focus is assisting clients in evaluating and prioritizing potential environmental, health and safety risks, and in minimizing the potential associated liabilities. The Company's address is 309 East 90th Street, Suite 4, New York, New York 10128 [Phone and FAX 212-722-7381].

Virginia J. Forrest of the Toxicology Detachment of the Naval Medical Research Institute at Wright Patterson Air Force Base is moving to a new assignment in Maryland. She was a councilor and the Dayton area liaison for the Ohio Chapter of SRA.

Kenneth D. Axe has joined Primatech Inc. as senior engineer. He has spent five years as program director of the Contra Costa County (California) Health Services Department and has participated in shaping California's Risk Management and Prevention Plan (RMPP) legislation since the enactment of Statute AB 3777.

Paul Price, formerly a senior regulatory analyst with the American Petroleum Institute, has joined ChemRisk, a Division of McLaren/Hart, as a Supervising Scientist in their Portland, Maine office. His current duties include exposure assessment for hazardous waste facilities [Phone 207-774-0012; FAX 207-774-8263].

Utilities to Use Natural Gas

The electric power industry is faced with having to reduce its sulfur dioxide and nitrogen emissions as mandated by the Clean Air Act Amendments while at the same time needing to add generating capacity to meet expected increases in the demand for electricity. Among the industry's options will be switching to fuels that contain lower levels of sulfur—in particular, to natural gas.

Utilities are expected to turn to cleaner burning natural gas for one-third to one-half of their capacity additions of 73 to 104 gigawatts by the year 2000. Despite these increases, U.S. electricity producers will continue to rely on coal for over one-half of their electricity generation. However, the additions of gas-fired capacity will put natural gas ahead of nuclear power as the second largest contributor to electricity generation in the nation.

The demand for natural gas by the utilities is expected to result in the consumption of an additional 64 billion to 305 billion cubic feet of natural gas through the year 2010. (—From *Annual Outlook for U.S. Electric Power 1991*, DOE/EIA-0474(91), July 1991.)

Positions Available

Environmental Science Opportunities

Life Systems, Inc., an environmental consulting firm, is seeking dedicated individuals to follow government agency guidelines and general scientific principles in performing exposure, hazard and risk assessments. The available positions are:

Principal Environmental Scientist to serve as principal author and technical team leader for human health and environmental impact assessments for hazardous waste sites; perform complex calculations of exposure and risk, screening-level contaminant fate and transport modeling; and provide technical support for planning assessment activities required as part of remedial investigations and feasibility studies. Candidate should have a PhD or MS degree, preferably in environmental science, biology, or chemistry, and experience in report preparation and scientific team management.

Environmental Scientist/Engineer to plan, manage, and perform evaluations of ecological effects associated with hazardous waste sites or activities and provide technical support for tasks involving analysis of environmental/ecological assessments, including studies for DoD and services such as EIS/EIA, policy making, and special studies related to the military's unique environmental concerns. Candidate should have a BS degree (required) and an MS degree (desired) in an environmental sciences discipline (such as chemistry, ecology, biology, or environmental/civil engineering) plus experience in technical or project planning.

Environmental Scientist to plan, manage, and perform technical efforts to review and synthesize health effects and exposure research and prepare health effects summaries for selected chemicals based on reviews of primary literature on oral, inhalation, dermal, reproductive, and genotoxic health effects; evaluate exposure potential and assess human health risks for the general population and sensitive subgroups; and evaluate research needs for regulatory decision making on specific chemicals. Candidate should have BS degree (required) in health sciences discipline and MS degree (desired) in zoology, biology, chemistry, toxicology, physiology, or environmental health.

For immediate consideration, send resume in confidence to:

Gayle Musiek, Recruiting Specialist
Life Systems, Inc.
24755 Highpoint Road
Cleveland, Ohio 44122
An Equal Opportunity Employer

Safety & Risk Assessment Professionals

Primatch is looking for experienced engineers and scientists to work in technical and managerial positions on risk and safety consulting projects. Candidates should have BS/MS/PhD qualifications in Chemical Engineering, Fire Protection, Loss Prevention, or related disciplines with a minimum of 5 years experience, preferably in hazard analysis or risk assessment techniques. Experience in the chemical or petroleum industry is preferred. Opportunities exist in Columbus, OH; San Francisco and Los Angeles, CA; Houston, TX; and Princeton, NJ.

Primatch specializes in providing risk and safety consulting, training, and software development services for the chemical, petroleum, and other industries handling hazardous materials. Primatch offers excellent career opportunities and an attractive

compensation and benefits package. Qualified individuals should forward their resumes for consideration in confidence to:

Lisa Matulich, Personnel Manager
Primatch Inc.
445 Hutchinson Avenue, Suite 200
Columbus, Ohio 43235
[Phone 614-841-9800]
Equal Opportunity Employer

Safety Analysis/Risk Analyst

Maintaining a focus on worldwide leadership, The Ralph M. Parsons Company remains at the forefront of large-scale, long-term projects in nuclear waste treatment systems, nuclear fuel processing, and petrochemical, refinery, and construction services. We are currently seeking individuals in the following disciplines: Fire Risk Analysis; SA/SAR; PRA; Explosive Safety; Health Physics; Hazard Analysis; Human Factor Engineering; Decontamination and Decommission; Waste Process/Package; Project Management; and Chemical Engineering.

Parsons offers an outstanding salary and benefits package which includes an employee stock ownership plan and the opportunity to advance in an exciting and growth-oriented environment. For prompt consideration, please submit a resume and salary history to:

Bill Heuser
The Ralph M. Parsons Co., Dept. SRA/VA
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Risk Assessment Professionals

McLaren/Hart, a top ten national environmental consulting firm, is setting the pace for the future. ChemRisk, a division of McLaren/Hart, specializes in conducting human and wildlife risk assessments, environmental fate and transport modeling, exposure assessments, toxic tort litigation support, environmental and occupational toxicology and air quality assessments.

ChemRisk is currently expanding and is seeking professionals to join our highly trained team in the following offices:

Portland, Maine Supervising Toxicologist	Alameda, California Supervising Toxicologist
Warren, New Jersey Assistant Toxicologist	Assistant Toxicologist
Houston, Texas Sr. Environmental Toxicologist	Irvine, California Supervising Toxicologist
Assistant Toxicologist	Cleveland, Ohio Supervising Toxicologist

If you are dedicated to solving the environmental problems of today and tomorrow, join the company that shares your commitment. McLaren/Hart offers a highly competitive salary and benefits package, which includes medical, dental, life and long-term disability insurance; pension plan; 401(k); vacation; sick leave; and holidays. Please send your resume and salary to:

Dept. RISK
1135 Atlantic Avenue
Alameda, California 94501
[or FAX your resume to 415-521-1547]
Affirmative Action Employer

Risk Assessor — Toxicologist

Burns & McDonnell, an employee-owned consulting engineering firm, has an immediate opportunity for an environmental toxicologist with 2-5 years experience in preparing risk assessments for hazardous waste sites. An MS degree and GEMS experience are preferred. This position includes the responsibility as Risk Assessment Section Chief. There is also a second position for an entry level person.

Would you like to participate in stock ownership, incentive bonus, and 401(k) plans? Send resume to:

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Hazardous & Radioactive Waste Management

Argonne National Laboratory is assisting its parent agency (Department of Energy) and other federal agencies in the assessment, remediation, and minimization of hazardous and radioactive wastes at facilities on the U.S. mainland and abroad. Several environmental engineers and scientists are needed at our site near Chicago to lead and/or participate in these activities. Individuals are sought with expertise in: risk assessment (radiological and chemical); hydrogeology; remedial investigations/feasibility studies; groundwater modeling; and waste management and minimization.

In addition to academic credentials (PhD, MS, or equivalent) and technical experience evidenced by publications, ideal candidates will be knowledgeable about NEPA, CERCLA, RCRA, and other regulations pertinent to federal facility compliance. Project/program management experience will also be a plus. If your background includes hazardous and radioactive waste management or remediation experience and if the prospect of creating innovative solutions to technically challenging problems at a center of excellence in environmental assessment meets your career objectives, please let us hear from you. We offer an excellent salary commensurate with your background, as well as a comprehensive benefits plan. For prompt consideration, send a detailed resume to:

Susan Walker
Box EID-EARM-28A
Employment and Placement
Argonne National Laboratory
9700 South Cass Avenue
Argonne, IL 60439
Equal Opportunity/Affirmative Action Employer

Senior Environmental Toxicologist

Baker Environmental, Inc. (formerly Baker/TSA, Inc.), located near the Greater Pittsburgh International Airport, continues to expand, creating excellent growth opportunities for environmental assessment, design, and management professionals. A Senior Environmental Toxicologist position is available to a person who wants a career with one of the world's fastest growing environmental consulting companies. The position requires an M.S. in toxicology, or strong toxicological credentials, and 3-5 years experience in risk assessment performance. Familiarity with CERCLA, RCRA corrective action, and State regulatory programs, and the ability to apply innovative risk assessment procedures, is essential. Strong communication and analytical skills are necessary. Occasional travel is required. Experience

in consulting work is preferred. Baker offers a competitive salary and benefits package including a generous 401(k) plan. Send resume to:

Baker Environmental, Inc.
420 Rouser Road, AOP #3
Coraopolis, PA 15108
ATTN: TMB

Petroleum Toxicologist

The American Petroleum Institute has an opening for a petroleum toxicologist to manage research on petroleum industry products and process streams and provide technical comments to government agencies. Applicant must have a PhD or MS in toxicology or related field with 5 years of experience in petroleum toxicology and/or risk assessment studies. Excellent scientific, interpersonal, and communication skills are essential. API offers an outstanding salary and benefits package. Submit c.v./resume to:

Robert Cunningham, Employment Manager
American Petroleum Institute
1220 L Street, NW
Washington, DC 20005
[Phone 202-682-8390]

Scientists and Engineers

Battelle-Pacific Northwest Laboratory is a leading multi-program national laboratory providing research and analytical support to various governmental agencies. We have a continuing need for highly qualified scientists and engineers capable of performing risk analysis. We have immediate openings in the following areas:

Probabilistic Risk Assessment of Reactor & Non-Reactor Nuclear Facilities
Safety Analysis for Reactor & Non-Reactor Nuclear Facilities
Risk & Safety Analysis of Non-Nuclear Facilities
Ecological Risk Assessment
Risk Cost & Safety Analysis
Worker Health & Safety
Regulatory Policy Analysis
Reliability Engineering

We are in the process of scheduling interviews, by appointment, for the 1991 Annual Meeting of the Society for Risk Analysis, December 8-11, 1991. If you wish to be considered, send your resume to:

Gilbert L. Lopez
Battelle-PNL Staffing Center
P.O. Box 1406
Dept. 6062GLL
Richland, Washington 99352

Position Wanted

PhD specialist in risk communication, risk perception, environmental policy, technological hazard management, and natural resource management seeks academic (Associate Professor) or research position in dynamic, multi-disciplinary environment. Location and salary are open to negotiation. Please respond to:

RISK newsletter/Position Wanted
1801 Buttonwood Street, #505
Philadelphia, Pennsylvania 19130

Risk-Related Happenings

Clement Awarded Contracts

Clement International Corporation, an environmental and health science firm headquartered in Fairfax, Virginia, has recently been awarded three multimillion dollar contracts by the U.S. Environmental Protection Agency (EPA) and a \$925,000 contract by the Occupational Safety and Health Administration (OSHA).

In a three-year \$4.4 million contract from the EPA Office of Pesticides Programs, Clement will review data submitted to EPA for pesticide registration or reregistration to determine whether they meet current standards of the Federal Insecticide, Fungicide, and Rodenticide Act (FIRA) amendments. If risk is present, Clement will assess the biological significance and health effects.

A second three-year \$4.4 million contract was awarded by EPA's Environmental Criteria and Assessment Office for assistance in developing, reviewing, and evaluating documents used to assess the risk posed by chemical pollutants. The company will also assist in the development of risk assessment methods and guidelines.

In a three-year \$3.75 million contract from EPA's Office of Toxic Substances, Clement will provide technical support for assessing the health and environmental safety of new and existing chemicals.

Under the OSHA contract, also for three years, Clement will help develop employee health standards. The work will be performed by Clement's K.S. Crump Division in Ruston, Louisiana.

Toxicologists Meet

The 1992 Annual Meeting of the Society for Toxicology (SOT) will be held February 23-27, 1992, in the Seattle Convention Center, Seattle, Washington. Described as the largest toxicology meeting in the world, over 3000 scientists are expected to attend. At last year's meeting, nearly 1300 abstracts were presented in 11 platform sessions, 12 poster/discussion sessions, and 46 poster sessions. [Abstract submission deadline was October 4.]

The first day will be devoted to continuing education courses, including a computer course on physiologically-based pharmacokinetic modeling and courses on the toxicity of halogenated hydrocarbons and biotech products, three organ systems,

and a case study in risk assessment. Advanced courses will address the topics of developmental toxicology and cell proliferation.

Symposia are planned in such areas as: Current Controversies in Cancer Causation: Mechanisms and Risks to Humans, Genetic Susceptibility to Environmental Agents, Chemical Allergy, Mercury Vapor Toxicology, and Specific Protein Changes as Indications of Toxicologic Mechanisms.

To receive a preliminary program and/or membership information regarding SOT, please contact the Society of Toxicology, 1101 14th Street, N.W., Suite 1100, Washington, D.C. 20005 [Phone 202-371-1393; FAX 202-371-1090].

AEHS Publishing Journal

As it begins its second year, the Association for the Environmental Health of Soils (AEHS) has targeted January 1992 for publication of its first peer review quarterly journal. AEHS was founded in September 1990 by Paul T. Kostecki and Edward J. Calabrese of the University of Massachusetts-Amherst to "provide a singular focus for soil contamination problems in this country and abroad" through "dissemination and discussion of technical and regulatory information on soil contamination issues. AEHS [serves] as a conduit for information between the regulatory and regulated communities; scientists and non-scientists; the public and private sectors." Among the nine-member AEHS Advisory Board is SRA member Chris Barkan, Association of American Railroads. For more information, please contact: Association for the Environmental Health of Soils, P.O. Box 312, Amherst, Massachusetts 01004 [Phone 413-549-5170; FAX 413-549-0579].

Luderer Named EPA Risk Communication Manager

Lynn Luderer has been appointed the new Risk Communication Program manager at the U.S. Environmental Protection Agency, succeeding Ann Fisher, who left EPA last year to accept a faculty appointment at Pennsylvania State University. Luderer previously was a senior analyst in EPA's Program Evaluation Division, having been with the Agency since 1986. Earlier, she was a policy analyst at the Office of Technology Assessment, the applied R&D

arm of the U.S. Congress. She has an MA in English and is currently completing her PhD in environmental studies from Duke University's School of the Environment.

EPA's Risk Communication Program sponsors applied research into effective risk communication methods, provides technical assistance on risk communication planning and implementation to EPA's program offices, offers training in risk communication and the basics of risk assessment, and maintains an information hotline (202-260-5606). Results of some of the research funded by EPA in the risk communication area will be featured at the forthcoming SRA Annual Meeting in Baltimore.

Second PSAM Conference Scheduled

Following SRA's successful International Conference on Probabilistic Safety Assessment and Management, held in Beverly Hills, CA, last February, it has been decided that a second conference will be held in March 1994. RISK newsletter will provide further information as plans develop. [PSAM Contact: Prof. George Apostolakis, Mechanical, Aerospace, and Nuclear Engineering Department, University of California, 405 Hilgard Avenue, Los Angeles, CA 90024-1597.]

NATO Workshop Scheduled

A NATO Workshop on the "Use of Biomarkers in Assessing Health and Environmental Impacts of Chemical Pollutants" will be held at the Grande Hotel Das Termas De Luso, Luso, Portugal, June 1-5, 1992. The workshop will bring together international experts on biomarkers and biomonitoring to formulate a unified strategy for development and validation of biomarkers as a means of assessing the status of human and environmental health. The topics to be discussed are biomarkers of exposure, biomarkers of dose-response, molecular dosimetry, biomarkers of reproductive toxicity, biomarkers of neurological toxicity, ecological biomarkers, and directions for further research, implication of results.

Interested persons should contact Curtis C. Travis, P.O. Box 2008, MS-6109, 4500S, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831-6109 [Phone 615-576-2107; FAX 615-574-9887].

Calendar of Events

November 29-30. **FOURTH ANNUAL CONFERENCE OF SRA-JAPAN**, Tokyo. [See page 13.]

December 8-11. **ANNUAL MEETING OF THE SOCIETY FOR RISK ANALYSIS**, Hyatt Regency Hotel, Baltimore, Maryland. [See articles in this newsletter.]

December 10-12. **INDOOR AIR QUALITY**, Harvard School of Public Health, Boston, Massachusetts. Course addresses passive exposures to formaldehyde, radon, airborne microorganisms, and tobacco smoke. Fee: \$750. For more information, contact: Mary F. McPeak, Office of Continuing Education, Harvard School of Public Health, 677 Huntington Avenue, Boston, Massachusetts 02115 (Phone 617-432-3515; FAX 617-432-1969).

December 16-18. **THIRD CONFERENCE OF THE EUROPEAN SECTION OF THE SOCIETY FOR RISK ANALYSIS**, Paris, France. Theme: Risk Analysis—Underlying Rationales. For more information, contact SRA-Europe Secretariat, Tooropstraat 34, 6813 KT ARNHEM, The Netherlands (Phone 31-85-437848; FAX 31-85-435310).

February 18-21, 1992. **NINETEENTH ANNUAL WATTEC CONFERENCE AND EXHIBITION**, Knoxville, Tennessee. Purpose: Forum to discuss management and successful integration of new product and process technologies. Sponsored by local and regional chapters of 39 technical and professional societies, including SRA. For technical program information, contact Dick Parker, Technical Program Chairperson, P.O. Box 3561, Oak Ridge, Tennessee 37831-3561 (Phone 615-483-8080). For exhibit information, contact Pat Dodds, Exhibits Chairperson, 312 Director's Drive, Knoxville, Tennessee 37923 (Phone 615-690-3211).

February 23-27, 1992. **1992 SOCIETY OF TOXICOLOGY ANNUAL MEETING**, Seattle Convention Center, Seattle Washington. [See page 22.]

March 2-6, 1992. **TRANS COMM '92**, Philippine International Convention Center, Manila, Philippines. An international congress/exhibition on transportation, communications, and the environment. For more information, contact the SRA, Philippines president Dr. Corazon PB. Claudio, Program Chair, c/o Technology, Risk and Development Foundation, Inc.; P.O. Box 12228; Ortigas Center Post Office 1600; Emerald Avenue, Pasig, Metro Manila, Philippines (Phone 632-631-3138; FAX 632-631-5714).

March 9-13, 1992. **MANAGEMENT OF SAFETY, HEALTH, AND ENVIRONMENT; RISK ASSESSMENT AND CONTROL**, Delft, The Netherlands. Sponsored by TopTech Studies, affiliated with Delft University of Technology. Postgraduate course (English-speaking) that presents an integrated approach to safety for safety managers, combining technological, management, and practical aspects and human factors. Program divided into nine module weeks given on a monthly basis, beginning in March 1992 and ending in January 1993. For more information, contact TopTech Studies, P.O. Box 5048, 2600 GA DELFT, The Netherlands (Phone 31-15-788019; FAX 31-15-781009).

March 23-27, 1992. **FUNDAMENTALS OF INDUSTRIAL HYGIENE and OCCUPATIONAL & ENVIRONMENTAL RADIATION PROTECTION** (also August 17-21), Harvard School of Public Health, Boston, Massachusetts. First course addresses

industrial processes associated with potential health hazards (fee: \$975). Second course provides radiation safety officers and occupational health professionals with the fundamentals for working safely with radiation (fee: TBA). For more information, see address above (December 10-12).

March 23-27 and April 13-17, 20-24, 1992. **SAFETY ANALYSIS AND RISK ASSESSMENT FOR CHEMICAL PROCESS INDUSTRY PRACTITIONERS**. Omni Royal Orleans Hotel, New Orleans, Louisiana. Three different courses organized by American Institute of Chemical Engineers. For registration information, contact AIChE Continuing Registration Department, 345 E. 47th Street, New York, New York 10017 or AIChE Registrar (Phone 212-705-7526).

April 6-8, 1992. **RISKS OF TRANSPORTING DANGEROUS GOODS**, Hotel Admiral at Harbourfront, Toronto, Canada. Sponsored by the Institute for Risk Research (IRR) at the University of Waterloo, the Transportation of Dangerous Goods Directorate of Transport Canada, and The Canadian Society for Civil Engineering. For further information, contact: Marjorie Matthews, Transport Canada (Phone 613-990-1139); or Frank Saccomanno, University of Waterloo (Phone 519-885-1211, extension 3355).

April 1-2, 1992. **TWENTY-EIGHTH ANNUAL MEETING OF THE NATIONAL COUNCIL ON RADIATION PROTECTION AND MEASUREMENTS**, Crystal City Marriott, Washington, D.C. Principal scientific session: Radiation Protection in Medicine. For additional information, contact NCRP, 7910 Woodmont Avenue, Suite 800, Bethesda, Maryland 20814-3095 (Phone 301-657-2652; FAX 301-907-8768).

May 18-22, 1992. **KHARKOV CONFERENCE ON USES OF RISK ANALYSIS IN EVALUATING AND SOLVING ENVIRONMENTAL PROBLEMS**, Kharkov, Ukraine, USSR. [See page 12.]

June 1-5, 1992. **NATO WORKSHOP: USE OF BIOMARKERS IN ASSESSING HEALTH AND ENVIRONMENTAL IMPACTS OF CHEMICAL POLLUTANTS**, Grande Hotel Das Termas De Luso, Luso, Portugal. [See page 22.]

June 1-12, 1992. **EARTH SUMMIT '92**, Rio de Janeiro, Brazil. [See page 18.]

June 8-10, 1992. **RISK MANAGEMENT—EXPANDING HORIZONS**, Boston, Massachusetts. Embedded topical meeting sponsored by the American Nuclear Society's (ANS) Power Division with several cosponsors, including SRA. Objectives: 1) to provide a forum for discussing issues and sharing ideas regarding risk management in potentially hazardous industries, and 2) to address identification, evaluation, and reduction of risks of all types from multi-disciplinary, multi-industry, and geographically diverse perspectives. [Deadline for submitting papers is past.] To request registration materials when available in April 1992, contact Dr. Ronald A. Knief; ERCE, P.O. Box 7010; Mechanicsburg, Pennsylvania 17055-7010.

June 9-12, 1992. **TENTH SUMMER INSTITUTE IN RISK MANAGEMENT IN ENVIRONMENTAL HEALTH AND PROTECTION** (and Quantitative Risk Assessment) [9 AM - 5 PM]. Legal, financial, and decision-making aspects of risk
(Continued on page 24.)



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Note: Contributions to the newsletter should be faxed to
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(Phones: 615-927-4640; 615-689-5315 [Res.])

Calendar of Events

(Continued from page 23.)

management; risk perception; risk communication; quantitative risk assessment. Hazardous and toxic waste applications. Bachelor's degree required. Write: Summer Institute in Risk Management, Robert F. Wagner Graduate School of Public Service, New York University, 4 Washington Square North, New York, New York 10003; or telephone Prof. Rae Zimmerman at 212-998-7432 (or 212-998-7430).

August 19-22, 1992. INTERNATIONAL ASSOCIATION FOR IMPACT ASSESSMENT (IAIA) '92 ANNUAL MEETING, World Bank Headquarters, Washington, DC. Will compare the methods of environmental assessment in industrial and third world countries as it relates to sustainable development. Persons wishing to present papers, should submit a 200-400 word abstract by February 1, 1992 to: Dr. Gary Williams, Argonne National Laboratory, Suite 702, 370 L'Enfant Promenade SW, Washington, DC 20024 (Phone 202-488-2413; FAX 202-488-2400).

September 14-18, 1992. XIIth INTERNATIONAL CONFERENCE ON THE SOCIAL SCIENCES AND MEDICINE, Peebles Hotel Hydro, Peebles, Scotland, United Kingdom. Will address the concept of risk and risk-taking in health care and health behavior. For further information, write to: Dr. P.J.M. McEwan, Glengarden, Ballater, Aberdeenshire AB3 5UB Scotland (Phone 03397 55429; FAX 03397 55995).

June 11-15, 1993. INTERNATIONAL ASSOCIATION FOR IMPACT ASSESSMENT (IAIA) '93 ANNUAL MEETING, Shanghai, China. Will emphasize reconciling relations between development and the social and natural environments. Persons wishing to present papers, etc., should submit a 150-300 word abstract *as soon as possible* to: Prof. Zhu Liang-Yi, IAIA '93 Meeting Chair, Shanghai Institute of Science & Technology Mg't, Shanghai 201900, China; Phone: 86-21-9529353; FAX: 86-21-3290385; or Prof. Alan L. Porter, IAIA '93 American/Europe Prog. Chair, Industrial & Systems Engineering, Georgia Institute of Technology, Atlanta, GA 30332-0205 (Phone 404-894-2330; FAX 404-894-2301).

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