

# RISK newsletter

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## SRA Meets in San Diego

### New President Sees Need for SRA Restructuring

When Jim Wilson takes the helm of the Society for Risk Analysis in December, one of his top priorities will be restructuring SRA to reflect its international make-up.

"The way that we deal with Japan and Europe in the structure of the Society is awkward," said Wilson, who will become SRA's 12th president at the 1992 Annual Meeting in San Diego. "Right now the Society is very much like a U.S. organization that has active members abroad. My goal is to find a pathway to a Society in which regional sections are full partners in its governance."

Wilson, who is the regulatory issues director of the Environmental, Safety, and Health Staff of the Monsanto Co. in St. Louis, Missouri, plans to create a reorganization committee. "We need to work toward equal status for the U.S., Japan, and Europe sections," he said.

"This is not something that we will get accomplished during my term, but maybe we'll have a proposal at the annual meeting in 1993 that we can talk about," said Wilson, who is succeeding Warner North as president.

Another of his goals is to foster SRA's growth around the world.

"I plan to ask Dr. North if he will accept the assignment as our ambassador to Eastern Europe, Eu-



James D. Wilson

rope, and Japan," Wilson said. "He and Vlasta Molak have made numerous contacts and have developed interest abroad. We need to take advantage of those resources and avoid having to duplicate what has already been done."

He would also like for the Society to continue improving its financial strength, such as by increasing operating reserves and finding new ways to generate income through the Gifts & Grants Committee.

Wilson, who is considered one of the nation's experts on science policy issues in risk assessments, was first introduced to risk analysis at Monsanto Co. where he has worked for 26 years.

"I got involved in risk analysis before I even knew it existed," he

*(Continued on page 4.)*

When the Society for Risk Analysis convenes on December 6 at the Hotel del Coronado in San Diego for its 1992 Annual Meeting, the attendees will once again discover that a plethora of papers have been scheduled within a relatively short time span. This year, however, concurrent platform sessions have been limited to six tracks of related papers, and a large number of additional papers are being presented in extended poster sessions.

After several years of complaints about the organization of annual meetings, the SRA Council opted for this revised format so that everyone will have access to a greater number of papers.

The six tracks selected for the 1992 meeting will focus on (1) environmental/global risk, (2) risk communication, (3) engineering and space applications, (4) exposure assessment, (5) regulatory policy, decision making, and other topics, and (6) dose response methodology (see page 2).

Within these tracks, approximately 250 papers will be included in the platform sessions, and about 110 will be presented as posters. The total of 360 papers is the largest number ever scheduled for an SRA annual meeting.

#### Pre-meeting EPA Workshop

Annual meeting activities will be preceded by a pre-meeting workshop sponsored by the U.S. Environmental Protection Agency and the California Environmental Protection Agency. Registrations are still being accepted for the workshop, which will be held from 8:00 a.m.-5:30 p.m. on Friday, Decem-

*(Continued on page 3.)*

*This newsletter is printed on recycled paper.*

# Program: 1992 SRA Annual Meeting

## Platform Sessions

### Track 1 - Environmental/Global Risk\*

#### Monday

- 1A. Ecological Risk I: Overview, Policy, and General Approaches
- 1B. Ecological Risk II: Aquatic Impacts
- 1C. Ecological Risk III: Risk-Based Remediation

#### Tuesday

- 1D. Global Risk I: Integrated Assessment I
- 1E. Global Risk II: Integrated Assessment II
- 1F. Global Risk III: Policy and International Risk Management

- 1G. Ecological/Global Risk Joint Session: Statistical Distribution and Analysis

#### Wednesday

- 1H. Valuation & Stakeholders I
- 1I. Valuation & Stakeholders II
- 1J. Transportation Risks
- 1K. Exposure Models: New Applications and the Impact of Conservative Factoring

\*Sponsored by Ecological Risk Assessment and Global Risk Analysis Specialty Groups.

Organizing Committee: Larry Barnhouse, Oak Ridge National Laboratory; Justin Lancaster, Harvard University School of Public Health.

### Track 2 - Risk Communication\*

#### Monday

- 2A. Risk Communication and Social Equity
- 2B. Empirical Studies of Risk and Culture
- 2C. EPA Risk Communication Roundtable I

#### Tuesday

- 2D. Conflict Resolution and Risk Communication

- 2E. History and Status of Risk Research
- 2F. EPA Risk Communication Roundtable II
- 2G. The Role of Trust in Risk Communication

#### Wednesday

- 2H. Risk Perceptions Around the World I
- 2I. Risk Perceptions Around the World II
- 2J. Public Perceptions of Nuclear & Chemical Hazards

\*Sponsored by Risk Communication Specialty Group.

Organizing Committee: Ann Fisher, Pennsylvania State University; Linda-Jo Schierow, Library of Congress.

### Track 3 - Engineering and Space Applications\*

#### Monday

- 3A. Safety Culture and Risk Management I
- 3B. Engineering Applications of Risk Analysis

- 3C. Human Factors and Human Reliability Analysis

#### Tuesday

- 3D. Safety Culture and Risk Management II
- 3E. Risk Analysis in Space Applications I
- 3F. Risk Analysis Methodology I
- 3G. Applications in the Chemical Process Industry

#### Wednesday

- 3H. Risk Analysis in Space Applications II
- 3I. Risk Analysis Methodology II
- 3J. Applications in Space and Defense Projects

- 3K. Risk and Hazards Analysis of Nuclear Waste Disposal

\*Sponsored by Engineering and Space Specialty Groups.

Organizing Committee: Douglas Orvis, Accident Prevention Group; Stanley Levinson, Babcock & Wilcox Nuclear Technologies; Sergio Guarro, The Aerospace Corp.; Robert Mulvihill, PRC Inc.

### Track 4 - Exposure Assessment\*

#### Monday

- 4A. Monte Carlo Modeling I
- 4B. Valdez Air Health Study I
- 4C. Valdez Air Health Study II

#### Tuesday

- 4D. Foodborne Exposure: Models and Case Studies
- 4E. Multimedia and Intermedia Exposure I
- 4F. Multimedia and Intermedia Exposure II
- 4G. Modeling Exposure from Soil Contamination

#### Wednesday

- 4H. Monte Carlo Modeling II
- 4I. Occupational Exposure
- 4J. Pesticides: Model for Exposure
- 4K. Implications and Implementation of EPA's 1992 Exposure Assessment Guidelines

\*Sponsored by Exposure Assessment Group and International Society for Exposure Analysis.

Organizing Committee: Paul Price, Chemrisk Division, McLaren/Hart; Barbara Petersen, Technical Assessment Systems; Thomas McKone, Lawrence Livermore National Laboratory; and Ken Sexton, EPA.

### Track 5 - Regulatory Policy, Decision Making, and Other Topics

#### Monday

- 5A. Status of Risk Assessment for the Waste Isolation Pilot Project (WIPP)\*
- 5B. Soil Sediments
- 5C. Siting

#### Tuesday

- 5D. Rights Against Environmental Risk I
- 5E. Rights Against Environmental Risk II
- 5F. Public Health Risk I
- 5G. Public Health Risk II

#### Wednesday

- 5H. Air Pollution Risk Analysis in Mexico and Czechoslovakia
- 5I. Risk Assessment
- 5J. Regulatory Decision Making I
- 5K. Regulatory Decision Making II

\*Simultaneous Panel Discussion: National Science Foundation/Private Sector Research.

Organizing Committee: Resha Putzrath, Organization Resources Counselors Inc.; Mary Paxton, American Petroleum Institute; Linda-Jo Schierow, Library of Congress; Justin Lancaster, Harvard University School of Public Health.

### Track 6 - Dose Response Methodology

#### Monday

- 6A. Cancer Dose Response Models
- 6B. Some Approaches to Problem of Combining Cancer Risk Information I
- 6C. Some Approaches to Problem of Combining Cancer Risk Information II

#### Tuesday

- 6D. Estimation of Benzene Risks
- 6E. Carcinogenic Risks: Case Studies
- 6F. Policy and Economic Considerations in the Use of Ancillary Data for the Identification of Carcinogens

- 6G. Dose Limits and Risk Management Issues

#### Wednesday

- 6H. Non-Cancer Risk Assessment: Air Exposures
- 6I. Non-Cancer Dose Response
- 6J. Uncertainty in Risk Assessment

Organizing Committee: Resha Putzrath, Organization Resources Counselors Inc.; Mary Paxton, American Petroleum Institute; Michael Ginevan, U.S. Department of Energy.

## Poster Sessions

Monday Through Tuesday Noon: Track 4 - Exposure Assessment

Tuesday Noon Through Wednesday: Track 1 - Environment/Global Risk  
Track 2 - Risk Communication

Track 3 - Engineering and Space Applications  
Track 6 - Dose Response Methodology

## 1992 Annual Meeting

(Continued from page 1.)

ber 4, at the Hotel del Coronado (see RISK newsletter, Third Quarter, 1992).

In the workshop, experts will present their thoughts on key issues used in setting guidelines for carcinogen risk assessments and will invite discussion from the participants. A report summarizing the results will be prepared for the EPA, and a summary will be delivered during the plenary session on Monday, December 7, to SRA members. Those wishing to register should contact Sue Burk, phone (703) 790-1745. The fee is \$75.

In addition, the Society will sponsor five additional workshops on Sunday.

### Tours/Reception

Also scheduled for Sunday are tours of San Diego and the San Diego zoo and an evening reception for all attendees (5:00-7:00 p.m.).

A Monday evening tour will consist of shopping and dining in Tijuana.

### Council Meetings

The 1991-92 SRA Council will hold its final meeting at the hotel on Sunday afternoon at 1:00 p.m.

The 1992-93 Council, including the newly elected members, will meet on Tuesday evening at 7:00 p.m.

### Plenary Session

The plenary session, which convenes at 8:30 a.m. Monday, will feature a presentation of the Society's 1992 Distinguished Achievement Award to Sheila Jasanoff of Cornell University, who will also address the session.

Other speakers will be David McCallum of Columbia University's Center for Risk Communication, who will report on the EPA-sponsored Friday workshop, and Adam Finkel of Resources for the Future, who will report on the November 17-19 conference held in Annapolis, MD, to evaluate EPA's approach for setting environmental priorities (see RISK newsletter, Third Quarter 1992, page 9).

## Annual Meeting Schedule

### Friday, December 4

8:00-5:30 Pre-meeting EPA Workshop

### Sunday, December 6

9:00-1:00 Tour of San Diego  
 9:00-12:00 Workshop: Desktop Chem. RA  
 9:00-4:30 Workshop: Residential Exposure  
 9:00-4:30 Workshop: RA Fundamentals  
 9:00-4:30 Workshop: Process Safety & RM  
 12:30-5:00 Workshop: CA Proposition 65  
 12:30-4:30 Discussion: Nat. & Tech. Risks  
 1:00-5:00 1991-92 SRA Council Meeting  
 2:00-5:30 Tour of San Diego Zoo  
 4:00-7:00 Registration/Book Exhibit  
 5:00-7:00 Reception—All Registrants

### Monday, December 7

8:00-4:00 Registration/Book Exhibit  
 8:30-10:00 Plenary Session  
 10:30-5:00 Platform Sessions  
 10:30-5:45 Poster Session I\*  
 10:00-6:00 RiskWare '92 Exhibit  
 12:00-1:30 Luncheon Meeting (Speakers)  
 5:30-11:00 Tour of Tijuana with Dinner

### Tuesday, December 8

7:00-8:30 Breakfast: New Members  
 7:00-8:30 Breakfast: Chapter Representatives  
 7:00-8:30 Breakfast: Foreign Registrants  
 8:00-4:00 Registration/Book Exhibit  
 8:30-5:00 Platform Sessions  
 8:30-12:00 Poster Session I (cont.)\*  
 8:30-6:00 RiskWare '92 Exhibit  
 12:00-1:30 Luncheon Business Meeting  
 1:00-5:45 Poster Session II\*  
 7:00-9:00 1992-93 SRA Council Meeting  
 7:30-8:30 Specialty Group Meetings:  
 Risk Communication  
 Ecological Risk Assessment  
 Engineering  
 Global Risk Analysis  
 Exposure Assessment

### Wednesday, December 9

8:00-11:00 Registration/Book Exhibit  
 8:30-5:00 Platform Sessions  
 8:30-3:30 Poster Session II (cont.)\*  
 8:30-3:00 RiskWare '92 Exhibit  
 12:00-1:30 Luncheon Meeting (Speaker)

\*Authors present during coffee breaks and at 5:00-5:45 p.m. Monday and Tuesday.

### Luncheon Speakers

Luncheon meetings will be held during each of the three session days. Speakers at the Monday luncheon will be Anthony Thompson and Bernard Goldstein, both members of the new national Risk Assessment and Management Commission.

The Wednesday luncheon speaker will be Kenneth Olden, director of the National Institute of Environmental Health Sciences and of the National Toxicology Program.

## Business Meeting

The Tuesday luncheon session will consist of the annual SRA business meeting. The program will include a presentation of SRA's Outstanding Service Award to Robert B. Cumming, the Society's first president. In addition, the results of the recent SRA election will be announced, the Society's newly named fellows will be honored, and the program committee for the annual meeting will be acknowledged.

### Tuesday Breakfasts

At least three breakfast meetings have been scheduled for 7:00 a.m. Tuesday. A new member breakfast will be given for those members who have joined the Society during the past year. Another breakfast will be held for representatives from the various SRA chapters. And a third breakfast will be held for all attendees from foreign countries.

### Specialty Group Meetings

The SRA specialty groups have scheduled meetings for 7:30 p.m. Tuesday (see schedule and page 4).

### Exhibits

RiskWare '92, an exhibit featuring risk-related software and data bases, will be open during session hours and until 6 p.m. Monday and Tuesday. It will close at 3 p.m. Wednesday.

A book exhibit will be held near the registration table during registration hours.

Additional information on the annual meeting is given in other stories throughout this newsletter.

### Organizing Committee

The program chairman for the annual meeting is Douglas D. Orvis of the Accident Prevention Group, and the general chairman is President-Elect James D. Wilson of Monsanto Co. Sue Burk of the SRA Secretariat's office is in charge of arrangements and logistical support. Other organizing committee members responsible for specific tracks are listed on page 2.

*Do you want to participate in SRA's RiskWare '92 or book exhibits? Call Sue Burk, SRA Secretariat, (703) 790-1745.*

# Specialty Groups Schedule Meetings

The Society's specialty groups are planning to hold meetings at 7:30 p.m. Tuesday, December 8, during the annual meeting (see schedule on page 3). In anticipation of these meetings, two of the groups submitted the following reports to RISK newsletter.

## Risk Communication

The Risk Communication Specialty Group, which was formed at the 1990 SRA Annual Meeting in New Orleans, will hear reports from the committees established at last year's meeting in Baltimore. The proposed mission statement, revised since it was published in RISK newsletter (First Quarter 1992), will also be discussed and voted upon.

The agenda for the meeting is as follows:

Directory of RCSG Members - *Rose Pfund*

Long-term Research Agenda - *Lynn Luderer*

Collaborations - *Judy (Yager) Selig*

Liaison with SRA and Other Groups - *Bill Mitchell*

Evaluation Approaches - *Ortwin Renn*

Risk Communication Sessions for the Annual Meeting - *Ann Fisher for Linda Schierow*

Communication - *Kelly Sund for George Carlo*

Ann Fisher, of the Pennsylvania State University and chairman of the group for the past two years, says that new items to be discussed will be planning a conference on the research agenda for risk communication (by Richard Rich) and networking (by Ann Fisher for Tom Hatfield). To facilitate networking, a compilation has been made of names, addresses, phone numbers, and interest areas of members.

## Engineering

All SRA members interested in participating in the Engineering Specialty Group are invited to the Tuesday evening meeting. The meeting will be conducted by Robert J. Mulvihill of PRC Inc., who was recently asked to lead the group by SRA President Warner North. In addition to discussing items for a future agenda, the group will decide how it will interface with PSAM-II, which is scheduled to be held in San

Diego in 1994 (see call for papers on page 10).

## Other Specialty Groups

Other specialty groups which will hold Tuesday evening meetings are the Global Risk Analysis Group, the Ecological Risk Assessment Group, and the Exposure Assessment Group.

### Risk Communication Workshop Planning Meeting

The Center for Environmental and Hazardous Materials Studies at Virginia Polytechnic Institute and State University will sponsor a workshop in the spring of 1993 devoted to designing future research on risk communication in the context of SARA's Title III. SRA members are invited to attend a discussion session that will help plan the agenda for the spring workshop. Persons interested in participating should meet at the SRA conference registration desk in the Hotel del Coronado at 5:30 p.m. on Tuesday, December 8. For information, call Richard C. Rich at (703) 231-5323 or David Conn at (703) 231-7508.

## New President

(Continued from page 1.)

said. "Around 1970, I was part of a gang of four at Monsanto who were asked to examine how the company was reviewing the environmental and health safety aspects of its product line.

"The decision-analytic tools that we developed then are still being used within the company, and they have

become common place in the industry," said Wilson, whose positions at Monsanto have included planning and information director of the environmental policy staff, manager of environment and planning in the detergents and phosphates division, commercial development specialist, and research chemist.

He now concentrates on risk assessment policy generation and the use of policies involving risk analysis at Monsanto. He is a frequent contributor of letters and other commentary on the application of science to health risk assessment in publications such as *Science*.

From 1989-90, Wilson took leave from Monsanto to serve as the science policy vice president of the American

Industrial Health Council. While in that position, he wrote a paper identifying hazard characterization as an important part of the Environmental Protection Agency's risk communication process and offered suggestions on how to clarify its nature.

Earlier he organized an effort by industry scientists to describe some of the principles of science-based carcinogen hazard identification.

A member of the Society since 1986, Wilson has served a three-year term on the Society's Council, chaired the Liaison Committee, and contributed several papers to the SRA journal.

He received his doctorate in organic chemistry from the University of Washington and his bachelor's degree in chemistry from Harvard University.

### Correction

On the hotel reservation form printed in the preliminary program for the SRA 1992 Annual Meeting, the hotel room rates should have been listed as \$135 for a double room and \$125 for a single room at the Hotel del Coronado. To make room reservations, call the hotel at (619) 435-6611 or fax (619) 522-8238.

# Annual Meeting Workshops

The following five workshops will be offered by the Society at the Hotel del Coronado on Sunday, December 6:

**Understanding and Performing Desktop Chemical Risk Assessments.** (9 a.m.-12:00 noon, \$75) This interactive workshop will combine the basic principles used in assessing risks from exposure to toxic substances with computerized data bases readily available to anyone with a computer and a modem. It will feature the TOXNET system and its data bases, including IRIS and HSDB. From a plain English discussion of the principles of toxicology through regulatory models currently used to enumerate risk, the workshop will provide a basic grasp of how risk assessment components and the computerized files are structured, how they are searched, and how the users can introduce specific components in the assessment for their own particular needs. Actual pollutant-specific case studies will be demonstrated as paradigms for conducting follow-up risk assessments.

Instructors: Philip Wexler, National Library of Medicine; James Kawecki and Susan Santas, Center for Risk Communication, Columbia Univ.

**California's Proposition 65: Risk Assessment and Dietary Exposure Assessment Methodologies.** (12:30 p.m.-5:00 p.m., \$75) This workshop will provide an overview of California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65), define the health effects relevant to the law, and review the scientific criteria used by the state to identify potential hazards. To be presented are the critical elements for the implementation of this legislation, including general methodologies for risk assessment and quantification of exposures, highlighting dietary exposure methodologies. Examples and case studies will be used to illustrate the scientific principles and regulatory decision processes associated with Proposition 65.

Instructors: Officials of California Environmental Protection Agency. Moderator: Barbara Petersen, Technical Assessment Systems.

**Reference House: Assessment of Residential Exposures.** (9:00 a.m.-4:30 p.m., \$125) This workshop will provide an introduction to the key issues in residential exposure estimation for both novice and experienced exposure assessors. Its goal is threefold: (1) to provide an overview of the key technical issues involved in assessing residential exposures, (2) to provide information and resources to exposure assessors for residential scenarios, and (3) to further the goal of creating a standard reference work on residential exposures. The workshop agenda and speakers are as follows:

Introduction - Bert Hakkinen, Procter & Gamble Co. (Reference House goals, purpose of workshop, and status of residential exposure assessment)

Multipathway Residential Exposures: An Overview - Tom McKone, Lawrence Livermore National Laboratory (Key issues, state of the science, research needs)

Residential Exposure Factor Data: Human Exposure Parameters - Jeffrey Driver and Gary Whitmyre, Technology Sciences Group Inc. (Key publications and documents, software, accessing key information and tools, research needs)

Residential Building Factor Data and Modeling of Human Exposures - Les Sparks, EPA, Research Triangle Park, and Jim Quackenboss, EPA, Las Vegas (Existing data sources, methods for data collection, application of data to model development, incorporation of indoor sink considerations, current software for modeling residential exposure, research needs)

Principles of Residential Exposure Assessment: An Introduction to Case Studies - Jeffrey Driver and Gary Whitmyre

Case Study #1: Refining Exposure Parameters and Reducing Uncertainties - David Burmaster, Alceon Corp.

Case Study #2: Impact of Population Mobility on Residential Exposures - Paul Price, ChemRisk Division, McLaren/Hart

Case Study #3: Residential Exposures to Pesticides - Jim Vaccaro, Dow Chemical Co.

Case Study #4: Residential Exposures via Consumer Products - Evelyn Lawson, Clorox Corp., and Bert Hakkinen

Organizers: Bert Hakkinen, Procter & Gamble Co.; Jeffrey Driver and Gary Whitmyre, Technology Sciences Group Inc.; with assistance from Paul Price, ChemRisk Division, McLaren/Hart.

**Fundamentals of Risk Analysis.** (9:00 a.m.-4:30 p.m., \$125) This workshop will review the body of knowledge that is essential for risk analysis applications in various fields. The instructors will explain the various specific applications of risk analysis and create a common basic language of risk analysis for all its practitioners. Organizers hope the workshop becomes a common knowledge denominator for all qualified risk analysts, which they can expand upon depending on their interests and fields of study. The workshop agenda and speakers are as follows:

Introduction and Types of Risk Analysis - Vlasta Molak, Gaia Unlimited Inc.

Cancer Models and Risk Assessment - Roy Albert, University of Cincinnati

Ecological Risk Assessment - Larry Barnthouse, Oak Ridge National Laboratory

Epidemiology and Risk Analysis - Leslie Stayner, NIOSH

Probabilistic Risk Analysis - Stan Kaplan, PLG Inc.

Risk Assessment at Hazardous Waste Sites - Smita Siddhanti, Cadmus Group

Other Applications of Risk Assessment - Vlasta Molak

Risk Perception and Risk Communication - Paul Slovic, Decision Research

**Process Safety Management and Risk Management Plans.** (9:00 a.m.-4:30 p.m., \$125) This workshop will provide an overview of the federal regulations on process safety management and risk management plans. Included is the U.S. Department of Labor Occupational Safety and Health Administration's final rule on process safety management of highly hazardous chemicals, which it released in February. This rule applies to all industries handling specified amounts of one or more of 128 chemicals, or five tons or more of flammable liquids or gases at one location. The principal requirement of this new regulation is the performance of a process hazard analysis. In addition, the Environmental Protection Agency is expected to issue related regulations within two years, requiring the preparation of a Risk Management Plan. These plans will stress the surrounding community rather than the workplace, as mandated by the Clean Air Act Amendments of 1990. The workshop agenda and speakers are as follows:

Regulatory Requirements - Bruno Loran, ESI

Hazard Evaluation - Robert Mulvihill, PRC Inc.

Human Factors and Process Safety - Najm Meshkati, University of Southern California

Consequence Analysis - Krishna Nand, ESI

Risk Estimates & Risk Management - Mardy Kazarians, ADL

Risk Communication - Ann Cardinal, Dynamac Corp.

To register for a workshop, contact Sue Burk of the SRA Secretariat's office at (703) 790-1745.

## Cornell Professor's Achievements Honored

For her insightful work on relationships between risk researchers and governments around the globe, Sheila Sen Jasanoff is the 1992 recipient of the SRA Distinguished Achievement Award.

Jasanoff, a professor and founding chair of the Department of Science and Technology at Cornell University in Ithaca, New York, has studied how the political structures of countries such as Germany, Britain, France, Canada, and the United States influence risk analysis.

"The way scientific evidence is interpreted depends on the political structure of a country," said Jasanoff, whose books include *The Fifth Branch: Science Advisers as Policymakers* (Harvard University Press, 1990), *Controlling Chemicals: The Politics of Regulation in Europe and the United States* with R. Brickman and T. Ilgen (Cornell University Press, 1985), and *Risk Management and Political Culture* (Russell Sage Foundation, 1986).

"In the U.S., people prefer an open debate on technical issues. There is much less of this in other countries," she said. "I prefer the democratic process, but there are trade-offs. You lose time and often resources because it is more costly to debate these things."

As the Distinguished Achievement Award recipient, Jasanoff will speak at the Society for Risk Analysis' annual meeting in San Diego during the plenary session on December 7.

"Her insights into risk analysis are reflected in her book *The Fifth Branch*, which makes the case that risk assessors are a growing source of power in government," said John Graham, a researcher at Harvard University's Risk Center

who nominated Jasanoff for the award. "She exposes how risk assessment by necessity reflects value judgments that need to be debated in a democratic process."

In addition to risk management, Jasanoff's primary research interests include international environmental policies and the interactions between science, technology, and the law.

"One of my major interests is building up the field of science and technology studies," she said. "Cornell is the first major research university to have a department of science and technology. MIT has a program, but not a department."

One of Jasanoff's current projects is editing a book on the policy consequences of the 1984 gas disaster in Bhopal, India.

Formerly Jasanoff was a visiting professor at Yale University and a visiting research associate at the Centre for Socio-Legal Studies at Oxford University. As a consultant, she has worked with the Organization for Economic Cooperation and Development, the National Science Foundation, the Oak Ridge National Laboratory, and others.

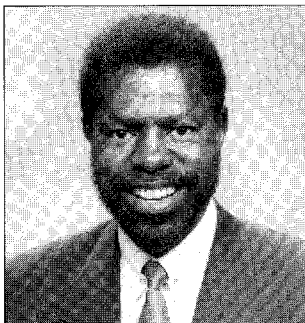
She is a fellow of the American Association for the Advancement of Science and an editorial advisor to *Knowledge*, *Risk Issues in Health and Safety*, and the *Yale Journal on Regulation*.



Jasanoff

## NIH Director to Speak at Luncheon

The role of the environment in disease etiology will be the highlight of the Wednesday, December 9, luncheon at the 1992 SRA Annual Meeting.



Olden

Featured speaker Kenneth Olden is the director of the National Institute of Environmental Health Sciences in Research Triangle Park, N.C., which is part of the National Institutes of Health. He is also a 1991 presidential appointee to the National Cancer Advisory Board and the director of the National Toxicology Program.

By training, Olden is a cell biologist and biochemist. His work includes 10 years of researching the properties of cell surface molecules and their possible roles in cancer.

One of Olden's recent research efforts is the anti-cancer drug Swainsonine. His research group has filed for a patent for the drug, which is proposed as a colony stimulating factor in the treatment of cancer.

Before joining the National Institute of Environmental Health Sciences, Olden was director of the Howard University Cancer Center and professor and chairman of Howard University Medical School's Department of Oncology.

Olden, a native of Parrottsville, Tenn., earned his doctorate at Temple University, his master's degree at the University of Michigan, and his bachelor's degree in biology at Knoxville College. Following his postdoctoral fellowships, he was a Macy Faculty Fellow as an instructor at Harvard Medical School.

Olden has served on the editorial boards of cancer and cell biology journals, and he has authored or co-authored more than 90 publications, including one on cancer cell biology that fellow researchers deemed a citation classic.

## Founder Receives Service Award

The man whose vision helped create the Society for Risk Analysis and its journal, and who served as SRA's first president, is being honored for his historic work.

Robert "Bob" Cumming, who organized the steering committee that founded the Society 11 years ago, is the 1992 Outstanding Service Award recipient.

Cumming says his interest in a risk-focused society stems back to a trip he took to Europe in 1979.

"I was traveling in Europe, visiting laboratories, when I noticed that people were becoming conscious of risk as a discipline beyond their own research fields," Cumming said during an interview near Oak Ridge, Tennessee, where he is a researcher in the Engineering Division of Martin Marietta Energy Systems.

"Near the end of my trip, I met a Swedish scientist who said that there was no journal devoted to risk. The type of research he was doing wasn't suitable for other journals because it was interdisciplinary."

Cumming decided that risk analysis researchers needed an international, interdisciplinary journal of their own. With the help of Robert G. Tardiff of the National Academy of Sciences, he formed a steering committee to decide how to launch the publication.

"We decided that we needed an international society as a mechanism to govern the journal," Cumming said. "Then we began to realize the many other possibilities that such an organization would have."

Hence, the Society for Risk Analysis was born in Washington, D.C., in 1981.

"Bob was the superworker who had the vision to get the right people together, get a journal going, and put it all in

place," said Richard Schwing of General Motors Research Laboratories in Warren, Michigan, who chaired the SRA Awards Committee that selected Cumming. "He was the great inspiration behind the Society's foundation."

Cumming, who has a Ph.D. in genetics and cytogenetics from the University of Texas, was the Society's first president and first editor of *Risk Analysis: An International Journal*. He also was this newsletter's first editor, and he worked with an artist to create the SRA logo.



Cumming

At Martin Marietta, Cumming is engaged in risk analysis of nuclear and other industrial facilities. His past research includes pioneering work in the fate and metabolism of environmental mutagens and molecular dosimetry of chemical mutagens. He also has a continuing interest in risk assessment of environmentally produced chronic health effects, the sociology of risk management, risk perception, and societal response to perceived risks. Previously he was with the Biology Division of the Oak Ridge National Laboratory.

His recent work includes analyzing risks of disinfecting drinking water in both industrialized and developing countries. In September of this year, he was a guest speaker at the first international conference on the safety of water disinfection, which was held in Washington, D.C. At the conference, he spoke on the occurrence and exposure of disinfection byproducts.

## Speakers to Discuss U.S. Risk Commission

A federal commission that will impact how the U.S. government uses risk analysis in setting regulations is the featured topic at the Monday, December 7, luncheon at the 1992 SRA Annual Meeting.

The speakers are two members of the Society for Risk Analysis, Bernard Goldstein and Anthony Thompson, who were appointed to the 10-member Risk Assessment and Management Commission. The Clean Air Act Amendments of 1990 established the commission. (See article in *RISK newsletter*, Second Quarter 1992, page 1.)

Although the national risk commission was signed into law in 1990, it has yet to begin work, or even hold its first meeting. This is because two congressmen, Speaker of the House of Representatives Thomas Foley, D-WA, and Majority Leader of the Senate George Mitchell, D-ME, have not yet made their appointments to the commission, despite the Clean Air Act Amendments' mandate that they do so by May 15, 1992.

President Bush, the National Academy of Sciences President Frank Press, Minority Leader of the House of Representatives Robert Michel, R-IL, and the Minority Leader of the Senate Robert Dole, R-KS, have all made their required appointments.

Goldstein and Thompson are the only two of the six appointments to the commission to date who are members of SRA.

"My main focus is to make sure the commission understands and appreciates the value of risk science in the federal regulatory process," said Goldstein, M.D., who is the director of the Environmental and Occupational Health Sciences Institute in Piscataway, N.J., and chairs the National Research Council's Committee on Risk Assessment Methodology. "I want to make sure we don't lose sight of the science in the process."

(Continued on page 19.)

## Society Names Twelve New Fellows

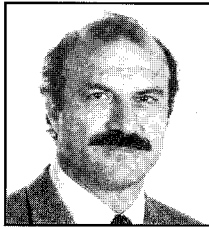
The Society for Risk Analysis' second class of Fellows will be honored at the annual meeting in December.

The 12 Fellows were nominated by peers for making significant contributions in at least one of four ways: original research, application, or invention; technical, scientific, or policy analysis leadership in an enterprise involving risk analysis in a substantial way; superior teaching or promotion of the use of risk analysis; or service within the Society that visibly contributes to its advancement.

No more than 1 percent of SRA's membership can be chosen annually as Fellows. Each past president receives recognition as a Fellow of the Society.

### George Apostolakis

Apostolakis, a professor in the University of California's Mechanical, Aerospace, and Nuclear Engineering Department in Los Angeles, has made contributions to the theoretical basis of probabilistic risk assessment, to risk education, and to the Society.



**Apostolakis**

Apostolakis organized the first PSAM conference (the 1991 SRA International Conference on Probabilistic Safety Assessment and Management), which focused on probabilistic methods dealing with safety issues in major technological systems, such as nuclear plants and defense systems. Apostolakis devoted two full years to planning the meeting and produced a two-volume set of proceedings. He is currently involved in the planning of PSAM-II, which will be held in 1994.

A charter member of SRA, Apostolakis received the 1991 SRA Outstanding Service Award and served on the SRA Council from 1987-90. He is a past president of SRA's Southern California Chapter.

Apostolakis is currently the principal investigator of two major research projects at the University of California. The first,

sponsored by the Nuclear Regulatory Commission, deals with the inclusion of organizational and managerial factors in probabilistic safety assessments of nuclear reactors. The second, sponsored by the National Aeronautics and Space Administration, defines experiments to aid the development of models for the assessment of risk due to fires in manned spacecraft.

In addition to being editor-in-chief of the international journal *Reliability Engineering and System Safety*, Apostolakis is on the editorial boards of the *Fire Safety Journal* and the *Process Safety and Environmental Protection* publication.

Apostolakis received his doctorate in engineering science and applied mathematics and his master's degree in engineering science from the California Institute of Technology.

His research interests are in the areas of probabilistic risk and reliability assessment, fire risk assessment, expert systems, nuclear reactor safety, software safety, and hazardous waste disposal.

His honors also include receiving the Effective Teaching Award from the University of California in 1977 and the Mark Mills Award from the American Nuclear Society in 1974. He was named a Fellow of the American Nuclear Society this year.

### Baruch Fischhoff

Fischhoff's achievements include pioneering work in developing ways to study the perception of risks, particularly those associated with technology.

"I have tried to study the decision-making processes of experts and lay people in ways that help each community to deal as effectively as possible with its risk problems, as well as to cooperate with one another in solving joint problems," Fischhoff said.

Fischhoff has been both a professor of social and decision sciences and a professor of engineering and public policy at

Carnegie Mellon University in Pittsburgh, Pennsylvania, since 1987. Before joining Carnegie Mellon, Fischhoff conducted joint research on cognitive processes and technological risk with Paul Slovic and Sarah Lichtenstein at Decision Research for 12 years. The collaborators first reported on their work in the milestone paper "Cognitive Processes and Societal Risk Taking" in 1976, which was the first of a series of papers describing the three associates' studies.

In 1991, Fischhoff received the SRA Distinguished Contribution Award for his pioneering work in developing ways to study the perception of risks. He also is a recipient of the American Psychological Association's Distinguished Scientific Award for Early Career Contribution to Psychology and for Contributions to Psychology in the Public Interest.

Fischhoff received his doctorate and master's degree in psychology from the Hebrew University in Jerusalem, Israel. He holds a bachelor's degree in mathematics from Wayne State University. His current research includes risk communication, adolescent decision making, evaluation of environmental damages, and insurance-related behavior.

### David W. Gaylor

Gaylor is director of biometry and risk assessment at the National Center for Toxicological Research in Jefferson, Arkansas, which is part of the U.S. Food and Drug Administration. He has served on a number of federal committees to evaluate the



**Gaylor**

safety of various chemicals and on federal work groups to develop procedures for assessing health risks due to exposure to toxic substances.

Gaylor is also an adjunct professor of statistics at the University of Arkansas Medical Sciences Center and at the University of Arkansas at Little Rock.

Prior to joining the FDA, Gaylor was chief of the Biometry Branch of the National Institute of Environmental Health



**Fischhoff**



Sciences, following employment with the Research Triangle Institute, General Electric Co., and the General Dynamics Corp.

A charter member of SRA, Gaylor serves on the editorial board of *Risk Analysis* and has authored or co-authored nine papers that have appeared in the journal. He has presented papers at five of SRA's annual meetings.

### Yacov Y. Haimes

Haimes is the founding director of the Center for Risk Management of Engineering Systems and the Lawrence R. Quarles Professor of Systems Engineering and Civil Engineering at the University of Virginia in Charlottesville. He has been an active contributor to the theory, methodology, and applications of risk analysis for more than 15 years.



Haimes

A former Congressional Science Fellow, Haimes has served on the staff of the Executive Office of the President and on the House Science and Technology Committee. Prior to joining the University of Virginia, he was chairman of Case Western Reserve University's Systems Engineering Department.

Haimes lectures in numerous workshops and short courses on risk assessment and management, including his annual course on risk-based decision making. He has organized and chaired five engineering foundation conferences on risk-based decision making and more than a dozen national and international conferences. He is a former chair of SRA's Committee on Conferences and Workshops.

Haimes is an associate editor of *Risk Analysis*, *Reliability Engineering and Systems Safety*, and the *IEEE Transactions on Systems, Man, and Cybernetics*.

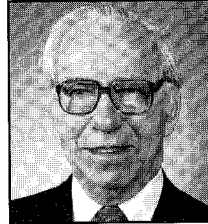
He is a past president of the Universities Council on Water Resources and a past vice president of the Institute for Electrical and Electronics Engineers' Systems, Man, and Cybernetics Society.

Haimes received his doctorate and master's degree in systems engineering from the University of California in Los Angeles. He holds a bachelor's degree in

systems engineering from the Hebrew University.

### Fred D. Hoerger

Hoerger's activities have involved public policy for assessing chemical and environmental risks, response to national and international regulatory proposals, evaluation of public issues, and identification of future environmental concerns.



Hoerger

Hoerger, who retired from Dow Chemical Co.'s health and environmental sciences division in 1991, is a consultant on regulatory and science policy issues. He also has extensive experience in product and process research as a chemist and in various management functions.

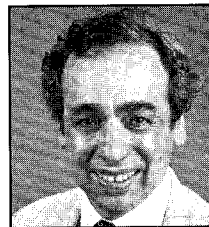
A member of SRA since 1984, Hoerger received the SRA Distinguished Service Award in 1988 and chaired the SRA Grants and Gifts Committee in 1988 and 1989. He also is a member of the American Chemical Society and has served on several of its committees as well as on committees of the American Industrial Health Council.

Hoerger received his doctorate and master's degree from Purdue University and his bachelor's degree from Heidelberg College.

The author of numerous papers on evaluating risks and on public policy for health and environmental hazards, Hoerger has a continuing interest in regulatory and science policy matters.

### Howard Kunreuther

Kunreuther's research focuses on the role of risk management tools for dealing with low-probability, high-consequence events.



Kunreuther

At the University of Pennsylvania, he is the Riklis Professor of decision sciences, public policy and management, and risk and insurance management at the Wharton School. He also co-directs the

Wharton Risk Management and Decision Processes Center.

One of Kunreuther's recent achievements was helping develop a Facility Siting Credo to improve the process of finding homes for noxious and hazardous facilities. The credo was the product of a national workshop on facility siting that Harvard University, the Massachusetts Institute of Technology, and the University of Pennsylvania co-hosted.

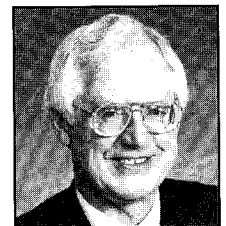
Kunreuther's SRA activities won him the Society's 1990 Distinguished Service Award. He was SRA treasurer from 1983-85 and has assisted in fund raising, chaired the Finance Committee, and served on the editorial board of *Risk Analysis*. He also has chaired sessions at annual meetings, assisted with SRA workshops, and regularly presented papers at annual meetings.

Formerly, Kunreuther was program manager of the National Science Foundation's Decision Risk and Management Science Program, and he has served on committees of the National Academy of Sciences. His numerous books include the co-edited *Integrating Insurance and Risk Management for Hazardous Wastes* with Rajeev Gowda (Kluwer Academic Publishers, 1989) and *Insuring and Managing Hazardous Risks: From Seveso to Bhopal and Beyond* with Paul Kleindorfer (Springer-Verlag, 1987).

Kunreuther received his doctorate in economics from the Massachusetts Institute of Technology and his A.B. degree from Bates College.

### Roger O. McClellan

McClellan is president of the Chemical Industry Institute of Toxicology in Research Triangle Park, North Carolina, a position he has held since 1988. Previously he was director of the Inhalation Toxicology Research Institute and president and chief executive officer of the Lovelace Biomedical and Environmental Research Institute in Albuquerque, New Mexico. During his 22 years with the Lovelace organization, he helped develop one of the world's leading research programs



McClellan

(Continued on page 10.)

## New Fellows

(Continued from page 9.)

concerned with the toxic effects of airborne materials.

McClellan has a long-standing interest in air pollution issues and has been a major proponent of the integration of data from epidemiological, controlled clinical, laboratory animal, and cell studies to assess human health risks of exposure to airborne materials. He is a strong advocate of the use of a source-exposure, dose-response paradigm for both developing quantitative estimates of human risk and identifying uncertainties that focused research efforts can reduce.

A charter member of SRA, McClellan is an adjunct professor at Duke University, the University of North Carolina, North Carolina State University, and Washington State University.

McClellan currently is chairman of the Research Strategies Committee and a member of the Executive Committee for the EPA's Science Advisory Board and is president of the American Association for Aerosol Research. He also is a member of the Advisory Council for the Center for Risk Management, Resources for the Future, and a member of the National Academy of Sciences/National Research Council Committee on Risk Assessment for Hazardous Air Pollutants. He has chaired several committees for the Science Advisory Board of the Environmental Protection Agency, including the Clean Air Scientific Advisory Committee.

McClellan, who received his doctorate in veterinary medicine from Washington State University, serves in an editorial role on several journals, including editorship of *CRC Critical Reviews in Toxicology*.

### M. Granger Morgan

Morgan is a professor and the department head of engineering and public policy at the H. John Heinz III School of Public Policy and Management at Carnegie Mellon University in Pittsburgh, Pennsylvania.

Since 1970, Morgan has been involved in research and teaching on problems in technology and public policy. Much of his work involves applied policy analyses and risk assessment on the health and environmental impacts of energy sys-

tems, risks from power frequency fields, and the social impacts of computer and telecommunication technologies.

He has also devoted considerable attention to the problems of developing and refining general techniques for dealing with uncertainty in quantitative policy analysis. He collaborated extensively with Max Henrion in developing and evaluating computer-based tools for policy analysis and decision.

Morgan's current research activities include work with colleagues on an integrated assessment of climate change and on possible health risks from 60-hertz fields. He also has worked with other researchers, including 1992 SRA Fellow Baruch Fischhoff, on risk communication studies.

Morgan is on the editorial boards of *Risk Analysis*, *IEEE Spectrum*, and *The Proceedings of the International Electrical and Electronic Engineers*. He serves frequently on committees of organizations such as the National Research Council and the EPA.

For his "substantial and sustained contributions to excellence in education," Morgan received the first Robert Doherty Prize from Carnegie Mellon in 1989.

A charter member of SRA, Morgan formerly served on the SRA Council.

He received his doctorate in applied physics and information science from the University of California, his master's degree in astronomy and space science from Cornell University, and his bachelor's degree in physics from Harvard College.



Morgan

### Chauncey Starr

Of Starr's many notable contributions during his on-going career, one was helping create the field of risk analysis through his seminal research and by stimulating others to study society's perception of risk.



Starr

Starr, the president emeritus of the Electric Power Research Institute in Palo Alto, California, helped to establish the basis of comparative risk analysis in his 1969 paper "Social Benefits vs. Technological Risk." Writing the paper while dean of the University of California's School of Engineering and Applied Science in Los Angeles, a position he held from 1967-73, Starr presented an analytical approach that he called risk analysis - a method for quantifying societal risks. After Starr chronicled his approach in the 1969 paper, his ideas became the basis of risk assessment guidelines for the nuclear power industry, as well as government agencies such as the Federal Drug Administration and the EPA. Since that publication, Starr has written numerous influential articles on the theory of risk analysis and its application to the management of technological risks.

In 1990, President Bush awarded Starr the National Medal of Technology for his exceptional contributions, such as developing risk assessment and risk management concepts, conducting pioneering work in the development of nuclear energy, contributing to energy production and policy and to engineering education, and organizing the Electric Power Research Institute (EPRI).

The basis of Starr's achievements is his underlying belief in the applications of science for social good. "I am a tremendous believer in the ability of technology to improve the welfare of mankind," said Starr. In honor of his 80th birthday this year, the symposium Energy Risk and the Environment was held at Stanford University.

While at UCLA, Starr also made a major impact on engineering education by creating several new departments, including an environmental engineering program. He also worked to enlarge opportunities in engineering for women and minority students. Prior to joining the staff of UCLA, Starr devoted 20 years to nuclear power work, serving as vice president of Rockwell International and as president of its Atomic International Division. He pioneered in the development of nuclear propulsion for rockets, in miniaturizing nuclear reactors for space, and in developing atomic power electricity plants. In 1972, Starr organized EPRI, a private research organization known for advancing science and technology in the area of the

electric utility industry. His current interests include global policy issues.

A charter member of SRA, Starr was awarded the Society's Distinguished Contribution Award in 1984. He received his doctorate in physics in 1935 and his bachelor's degree in electrical engineering from Rensselaer Polytechnic Institute, Troy, New York.

### Ola Svenson

Svenson, a professor of psychology at Lund University in Lund, Sweden, has researched risk perception and decision making since the 1970s.



Svenson

In 1985, he began specializing in research areas related to human factors in the nuclear power industry. During the past seven years, he has worked on research projects with the Swedish Nuclear Power Inspectorate, writing numerous reports and conducting benchmark studies. His research interests also include cognitive psychology and human decision making.

Previously, Svenson was a professor of psychology at the University of Göteborg, a professor and researcher at the University of Stockholm, and a researcher at the Swedish Council for Social Science Research. He has been a visiting researcher at Decision Research in the United States, an invited researcher at the London School of Economics, and a visiting researcher at the University of Paris.

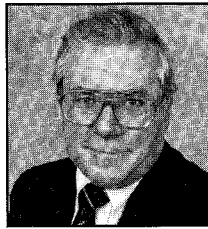
One of his earlier projects involved conducting traffic safety research within Sweden's Traffic Safety Office when the country switched from left-hand to right-hand driving.

A member of SRA since 1983, Svenson served as councilor from 1986-89. He received his doctorate and master's degree in psychology and mathematics from Stockholm University.

### Robert G. Tardiff

Tardiff is a founder of SRA, helping to organize a steering committee in 1979 that led to the creation of the Society.

Considered an expert in toxicology and risk assessment, Tardiff is the vice president for health sciences at EA Engineering, Science, & Technology Inc. in Vienna, Virginia. He has more than 25 years of experience in directing and conducting risk assessments and developing methodologies.



Tardiff

Previously he was chief of the toxicological assessment branch of the EPA and was executive director of the National Academy of Sciences/National Research Council's board on toxicology and environmental health hazards.

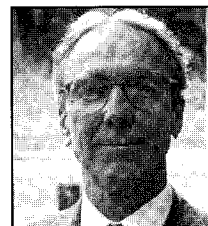
Tardiff has performed toxicologic interpretations and research, risk assessments, safety evaluations, and regulatory compliance evaluations for both private and public organizations. He has evaluated pesticides, occupational toxicants, consumer products, medical devices, and environmental contaminants in all environmental media. He has provided guidance on regulatory compliance and risk communications, in addition to participating extensively in risk negotiations.

His awards include the EPA Scientific and Technological Achievement Award-Health Effects in 1981.

Tardiff received his doctorate in pharmacology and toxicology from the University of Chicago and his bachelor's degree in biology from Merrimack College.

### Arthur C. Upton

Since 1980, Upton has been professor and chairman of the Department of Environmental Medicine in New York University's School of Medicine. He also has been the director of New York University's Institute of Environmental Medicine for the past 12 years.



Upton

A charter member of SRA, Upton served as a council member from 1983-87 and on the editorial board of *Risk Analysis*.

Before joining New York University, Upton was both director of the National Cancer Institute and a rear admiral with the U.S. Public Health Service from 1977-79. He was an associate pathologist at Brookhaven National Laboratory from 1969-77.

He currently serves on several committees, including the American Association for Engineering Societies' Task Force on Risk Analysis, the Institute for Evaluating Health Risks' Committee on Science Advisors, and the Center for Environmental Information's Advisory Panel for Environmental Risk Communication Project. Upton is on the editorial boards of several publications, including the *American Journal of Industrial Medicine*, *Experimental Gerontology*, *Toxicology and Industrial Health*, and the *Industrial Crisis Quarterly*.

Upton is a past president of the American Association for Cancer Research, the American Society for Experimental Pathology, the Radiation Research Society, and the International Association for Radiation Research. He currently serves as president of the Ramazzini Institute for Occupational and Environmental Health Research Inc.

His past honors include being named an American Association for the Advancement of Science Fellow, a Rutgers University Honorary Lecturer in 1991, and an Honorary Life Member of the New York Academy of Sciences in 1991.

### Membership Directory Mailed

An updated version of the SRA membership directory was mailed to all members of the Society during the last week of October.

The directory lists all members who paid their dues for the year 1992. If you did not receive a directory, please check your records to ensure that you have paid your dues.

The practice of the Society is to send out first notices for dues in January and second notices in March. In the meantime, the member continues to receive the newsletter the remainder of the year but is removed from the mailing list for the SRA journal, the directory, and certain other items.

Payment of dues should be made to the SRA Secretariat at the address listed on the back page of this newsletter. Annual dues are \$60 for full members, \$35 for students including journal, \$10 for students without journal.

# CALL FOR PAPERS

## PSAM-II

*An International Conference Devoted to the Advancement  
of System-Based Methods for the Design and Operation  
of Technological Systems and Processes*

**March 20-24, 1994**  
**San Diego Hilton Beach and Tennis Resort**  
**San Diego, California, USA**

**Founding Societies: Society for Risk Analysis  
European Safety and Reliability Association**

### Scope

The purpose of PSAM is to provide a forum for the presentation of scientific papers covering both methodology and applications of system-based approaches to the design and effective, safe operation of technological systems and processes. These include nuclear plants, chemical and petroleum facilities, defense systems, aerospace systems, and the treatment and disposal of hazardous wastes. The objective is to share experience to the benefit of all industries.

The following is a list of topics within the scope of the meeting:

- |                                                                          |                                                                                                            |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 1. Risk management and decision making.                                  | 12. Computerized control systems and operator aids.                                                        |
| 2. Risk-based regulation.                                                | 13. Organizational factors and safety culture.                                                             |
| 3. Reliability-based design.                                             | 14. Automatic fault detection and diagnosis.                                                               |
| 4. Probabilistic and deterministic models for process safety management. | 15. Redundancy management.                                                                                 |
| 5. Uncertainty and sensitivity analyses.                                 | 16. Artificial intelligence in support of process safety management.                                       |
| 6. Uncertainties in physical and chemical phenomenology.                 | 17. Software dependability.                                                                                |
| 7. Expert judgment in assessment studies.                                | 18. Earthquakes, fires, tornadoes, and other natural phenomena.                                            |
| 8. Cognitive models of human behavior.                                   | 19. Survivability and vulnerability.                                                                       |
| 9. Design and evaluation of man-machine systems.                         | 20. Safeguards analysis.                                                                                   |
| 10. Human factors and human reliability.                                 | 21. Aging of systems, structures, and components.                                                          |
| 11. Risk-based methods for improving operator performance.               | 22. Communicating the results of risk assessment and management to peers, decision makers, and the public. |

### Instructions for Summary Submission

Four copies of a summary (800-1,200 words, typed, single-spaced) should be submitted to the Technical Program Chairman no later than May 13, 1993. *Summaries will contain a title and include all authors' names, affiliations, and telephone and fax numbers.* Authors should indicate the primary and one alternate category with which their papers are most closely identified. Full papers will be due October 10, 1993. Papers will be published and issued at the Conference.

### Technical Program Chairman

Professor George Apostolakis  
Mechanical, Aerospace, and Nuclear Engineering Department  
38-137 Engineering IV  
University of California  
Los Angeles, CA 90024-1597 USA  
Telephone (310) 825-1300; Fax (310) 206-2302

## U.S. Bill to Strengthen Risk Assessment

On Capitol Hill this fall, an SRA member was part of a thought-provoking debate on a bill that, if passed, will reshape risk assessment in the federal government.

"What the bill would do is preserve the integrity of the risk assessment process, which has come under considerable fire in recent years. Some of this criticism was justified; some was motivated by inappropriate considerations such as politics, personal profit, or conversely an uncritical worshiping of the environment," said John Bailar, a professor at McGill University in Montreal, Canada, and a member of the Society for Risk Analysis, in an interview. He formerly was a professor at Harvard University and held research and management positions at the National Cancer Institute.

Sponsored by Sen. Daniel Patrick Moynihan, D-NY, the Environmental Risk Reduction Act (S.2132) would help make scientific research, rather than political forces or personal preferences, the basis of the government's risk assessments.

Bailar, who did not speak as a representative of SRA, was one of six professionals to testify at the bill's hearing on September 18.

"The main reason for my strong support of S.2132 is that it strengthens the scientific and technical oversight of risk assessment at EPA," Bailar testified at the hearing before nine senators. The bill "will help to assure that political forces are properly expressed at the phase of risk management."

The bill, which is still in the Senate's Committee on Environment and Public Works, mandates the creation of two committees within the Environmental Protection Agency's Science Advisory Board. One committee would rank risks to public health and the environment, and the other would examine the benefits of eliminating such risks.

The bill would also strengthen the EPA's Environmental Monitoring and Assessment Program (EMAP) by making it a congressionally mandated ac-

### **Environmental Bureau in Demand**

Rumblings have begun again about the need for a U.S. Bureau of Environmental Statistics.

Although the Environmental Risk Reduction Act doesn't propose to set up such a bureau, it was mentioned at the bill's Senate committee hearing in September.

"In 1987 I called for the creation of a quasi-independent bureau of environmental statistics that would fulfill the same role within EPA that the Bureau of Labor Statistics does within the Labor Department," said Paul Portney, vice president and senior fellow of Resources for the Future.

"Both the Senate and the House at various times have passed legislation that would create this bureau of environmental statistics," he said. "While S.2132 doesn't speak to that . . . I commend you for giving further emphasis to the importance of environmental data collection and dissemination to the public."

SRA member John Bailar said the bill, which is still in committee, takes a step forward by mandating that the Environmental Monitoring and Assessment Program collect environmental data and produce annual statistical reports for Congress and the public.

"Every substantial government agency has found it necessary to have a major statistical activity. The Bureau of Labor Statistics is key to the Department of Labor. That department could hardly function as it does without the Bureau of Labor Statistics," Bailar said in support of institutionalizing EMAP at the hearing. He is a professor at McGill University in Montreal, Canada.

The United States should create a similar data bank for risk assessment and risk management, Bailar said in an interview. "We do not have the data base that we need. We need to have data on a national basis with a sufficient frequency to identify and track trends. We need demonstrably high quality. We need integration and the guarantee that long-term series will be carried on."

The bill's sponsor, Sen. Daniel Patrick Moynihan, D-NY, compared the acceptance of risk assessments today to that of unemployment statistics in the 1960s.

"When the monthly unemployment rate comes out, everyone agrees, 'Well, that is the unemployment rate.' In 1961, they didn't. The Chamber of Commerce knew it was always too high; the AFL-CIO knew it was always too low," Sen. Moynihan said. "The idea of sampling was new, very suspect and mysterious. With time, we have reached a point where we accept this data."

Sen. Moynihan noted that many in Congress aren't familiar with risk assessment. "We've had only two natural scientists ever serve in the United States Senate. The first was Thomas Jefferson," he said.

tivity. In addition, more than \$1.2 billion in research funding over six years would back the bill's provisions. The research would include collecting environmental data and producing annual statistical reports through EMAP.

The bill also would require the EPA to create risk assessment guidelines by setting minimum standards for different risk assessment approaches.

Bailar and other supporters applauded the bill for giving risk assessment a scientific basis that federal decision makers could draw from when setting national priorities.

"We need a stronger scientific foundation on which to build risk assessments," said President Roger Hirl of the Dallas-based Occidental Chemical Corp., who represented the Chemical Manufacturers Association in support of the bill. "Assumptions that are made should be well-documented and grounded in sound science."

But others at the hearing argued that in ranking risks rural areas would be unfairly slighted because of their smaller populations, that the EPA would have conflicting laws governing it, and

*(Continued on page 14.)*

# Eastern Europe Problems Invite Risk Analysis

*(Editor's Note: For the second time in a little more than a year, SRA Secretary Vlasta Molak has visited cities in Eastern Europe, meeting with people interested in applying risk analysis methods to their countries' problems. Her report on visits in Budapest in Hungary, Zagreb and Osijek in Croatia, Warsaw and Pultusk in Poland, and St. Petersburg in Russia is summarized below.)*

When I returned to Eastern Europe in October, I was struck by the many changes that have occurred during the past year and also by the spirit of the people striving to confront both immediate and long-range problems.

## War-torn Croatia

At the University of Osijek in Croatia, Professor Ante Lauc asked me to give a lecture on risk analysis to students. It was an eerie feeling to give a lecture in a cold classroom where most of the windows were broken and the ceiling was filled with holes from grenades. I found it heart-breaking to listen to the 20- to 22-year-old students describe how they had lived for months in basements during the warfare.

But in spite of the harsh situation, the students and some professors are interested in establishing an SRA chapter in Osijek. I believe that the methods of risk analysis would be useful in rebuilding their city because it would help them evaluate options and select those with the least risk and most benefit.

In Zagreb, Croatia, I attended a three-hour meeting of about 40 local people who are working to form an SRA chapter. Those present were particularly interested in U.S. environmental laws and the use of risk analysis in solving environmental and chemical safety problems. They are planning a series of lectures on "How to Survive," focusing on risks in war-torn Croatia, and a collaboration on projects that need an interdisciplinary approach using risk analysis methods. We may hear more about their activities from one of their members at our annual meeting.

## Hungary Conference

In Budapest, I attended the International Meeting on Contamination in Eastern Europe. Organizers were the U.S. Environmental Protection Agency,

the Regional Environmental Center for Central and Eastern Europe, and the University of Florida. Unfortunately, the \$400 registration fee, which equaled several monthly salaries of East European scientists and engineers, prevented many from attending.

I also met with engineers at the New Workers Union, who are interested in establishing a Budapest chapter of SRA. A chemical engineer, Paul Gergely, explained the role of his organization in improving workers' health and safety in Hungary. He is very interested in the use of risk analysis in evaluating employee health and Budapest's air quality. He also hopes to attend SRA's annual meeting.

## Interest in Poland

In the medieval town of Pultusk in Poland, I participated in a workshop on improving environmental awareness of local authorities in Eastern Europe, which was held in a castle. Other participants were from government agencies and private organizations in Western and Eastern Europe. For four days,

*(Continued on page 17.)*

## U.S. Bill

*(Continued from page 13.)*

that the bill would allow researchers to make decisions that Congress should control.

"There is no committee of Ph.D.s who can relieve the Congress of the difficult job of setting priorities," said Sen. Dave Durenberger, R-MN. "There is no technical or scientific fix for our condition."

Sen. Max Baucus, D-MT, agreed. "We run a risk in pursuing this legislation of turning over too much of the decision process and the public process to non-public policy people," said Sen. Baucus. "Science is a tool; it is an aid. It is not the final determinate. In the end, it is the decision makers who must use all tools that are available to them in order to make the best decisions."

Others speakers disputed these views, saying that the bill's language

allowed researchers only to identify risks, not to make policy decisions.

"I do not see in this bill any abandonment of the major, and quite proper, authorities of Congress," Bailar said. He stressed that a distinction between risk assessment and risk management should be maintained, with independent researchers assessing risks and Congress or the EPA making risk management decisions.

We "need to maintain a clear, crisp, continuing, conceptual distinction between risk assessment and risk management. I regard risk assessment as a strictly objective, scientific, and technical process," Bailar said.

Sen. Frank Lautenberg, D-NJ, agreed that the bill leaves management decisions in the hands of the federal government.

"The question of who sets priorities is a very important one. As I read

the Act, ultimately it is either going to be Congress or it is going to be the EPA Administrator who is accountable. It is not going to be this committee, [which is only] going to identify the relative risks and the relative benefits," Sen. Lautenberg said.

A driving force behind the bill's creation is the need to channel funds toward the most important problems facing the environment and human health, according to the bill's sponsor, Sen. Moynihan, and other supporters.

"The issue is . . . whether the same money and effort spent elsewhere would accomplish more," said Hirl. This bill "would enable us to determine how to get the biggest bang for the buck."

The bill stems in large part from the report *Reducing Risks and Setting Priorities and Strategies for Environmental Protection* from the EPA's Science Advisory Board.

## SRA International Updates

### Kiev Chapter Founded in European Section

A new SRA chapter has formed in Kiev, Ukraine. The chapter is an affiliate of the European Section and also has direct links to the parent SRA in the United States. The inaugural meeting of the Kiev Chapter will take place on November 11-13, 1992, at the Glushkov Institute of Cybernetics and also will be a full-scale conference on the topic "Models and Methods of Risk Assessment and the Problems of Safety of Ecological and Economic Systems." A formal business session to establish the new chapter will be included in the conference schedule.

### Meeting Date Changes

The dates of the 1993 Conference of SRA-Europe have been changed. The conference will be held October 18-20 in Rome, Italy. The call for papers was published in the third quarter issue of RISK newsletter. Abstracts and other communications should be sent to Dr. Paolo Vestrucci, N.I.E.R., Via S. Stefano 16, 40125 Bologna, Italy. Telephone: 39-51-239728, fax: 39-51-227824.

SRA-Europe mounted a very successful display booth at the recent International Conference on Risk Assessment, organized by Britain's Health and Safety Executive and supported by speakers from many international organizations—both governmental and industrial. SRA Past President Vincent Covello spoke on "Risk Communication: Challenge for the 1990s."

Elections for the European Section's 1993 Executive Committee will be held soon, and the results will be announced in the next RISK newsletter.

### News from Croatia

The SRA chapter forming in Croatia now has 67 members. They are preparing a series of meetings on the theme "How to Survive," addressing issues that are important in rebuilding

what war has destroyed in their country. The meetings will bring scientists, politicians, and the public media together to discuss four topics: safety, home rebuilding, food production, and energy supply.

### Czech Republic Chapter Organizing

*Editor's Note: The following article is an edited report by Karel Bláha of the National Institute of Public Health in Prague, Czech Republic. Bláha attended the 1991 SRA Annual Meeting in Baltimore and is helping to organize the SRA chapter in that country.*

During the international breakfast at the 1991 SRA Annual Meeting, I was encouraged to establish a chapter of SRA in the Czech Republic. During my return flight home, I had plenty of time to think about how an organization such as SRA is terribly lacking in our country. Numerous scientists in different disciplines involved in risk assessment and consequent processes are internationally recognized, but the common sense so needed in this field and demonstrated so well at the annual meeting is almost unknown in the Czech Republic.

In January 1992 I consulted with some colleagues, including Miroslav Cikrt, M.D., the director of the Center for Industrial Hygiene and Occupational Diseases at the National Institute of Public Health, about forming an SRA chapter. During the month we established an organizing committee of 15 people, who were given copies of the SRA bylaws and asked to collaborate. The committee first met on April 8 at the National Institute of Public Health to thoroughly discuss the bylaws. The bylaws were found to be acceptable except for the paragraphs referring to U.S. legislation, which should be tailored to our laws in Czech.

As the Czech legislation is currently very incomplete, with old laws being replaced by new ones, the committee agreed that *participation in the Czech legislative process* would be one of the most important tasks of the chapter. Two members of the committee are representatives of the Ministry of Health and Ministry of Environment, so they already are in positions where they can promote this idea.

The committee also discussed the extreme urgency of *promoting education and training*. Several committee members are teachers in postgraduate courses, and the U.S. Environmental Protection Agency has committed to organizing a course in risk assessment in Czechoslovakia. (The first stage was a workshop for 15 participants at Ostrava, Nother Moravia.)

Another basic task discussed by the committee is *communication with existing scientific societies, organizations, and non-governmental organizations*. The Czechoslovak Chemical Society, Biochemical Society, Society for Occupational Health, and Green Parliament already have been contacted to inform their members of the new SRA chapter. The committee members also agreed to present SRA at national meetings and conferences that they, themselves, would be attending.

I hope to have held the first meeting of those interested in forming the Czech Chapter before the 1992 SRA Annual Meeting. I plan to inform the Society of the chapter's progress at the annual meeting.

For more information about the Czech Chapter, contact Ing. Karel Bláha, Ph.D., National Institute of Public Health, Srobarova 48, 100 42 Prague 10, Czechoslovakia. Telephone: 73-87-15, fax: 422-736-904.

Other projects using interdisciplinary risk analysis methods are also planned. For more information, write to Dr. Branimir Molak, Daniceva 33, Zagreb, Croatia, Europe, or call him at 3841-329-816.

## Chapter News

### Metropolitan (CT-NJ-NY) Chapter

The new president of the Metropolitan Chapter is Miriam de Salegui, whose address is 845 West End Avenue, Apt. 5-F, New York, New York 10025. She will also serve as the chapter's contact person (see box).

Current and prospective members of the chapter—which covers the region of Connecticut, New Jersey, and New York—will meet for a general business meeting on November 13 at the Surdna Conference Center of New York University. At the meeting, members will receive the latest update for the 1992 SRA Annual Meeting, elect or appoint standing committees, and discuss the agenda of local chapter meetings through spring 1993. Proposed upcoming events include a day-long meeting on municipal incineration, which will include a session on new health risk analyses for dioxins, and a meeting on governmental comparative risk ranking studies.

### National Capital Area Chapter

Klemm Analysis Group Inc. at the National Trust for Historic Preservation in downtown Washington, D.C., was the site of the September 16 meeting of the National Capital Area Chapter. Curtis Travis, SRA past president and director of the Center for Risk Management at Oak Ridge National Laboratory, lectured on the levels of risk at hazardous waste sites, the effectiveness of technologies for remediating sites, the question of an appropriate interspecies extrapolation factor, and the rise of pharmacokinetics in risk analysis.

There was a reception preceding the lecture, and both were very well attended.

In October Bernard Cohen, chairman of the Physics Department at the University of Pittsburgh, spoke on "Test of the Linear Non-Threshold Theory of Radiation Carcinogenesis."

A chapter meeting is scheduled on November 19 and will include a lecture on the "Activities of FCCSET Subcommittee on Risk Analysis" by Frank Young, Deputy Assistant Secretary for Health, Science, and the Environment of the Department of Health and Human Services.

The chapter's final fall meeting will be on January 14, 1993. Steve Klaidman, executive director of the Undergraduate Values Program at Georgetown University, will speak on the topic "Turning Soft Science into Hard News."

### New England Chapter

The New England Chapter has continued its monthly format of topics and presentations. In September, the group discussed comparative risk assessment. Margot Levine of Clayton Environmental presented a talk on the application of comparative risk to the Massachusetts Bay Program, a national estuary. Richard Minard of the Northeast Center for Comparative Risk discussed the role of scientists in the comparative risk process.

In October the chapter meeting topic was ecological risk assessment. Jamie Maughm of Metcalf and Eddy presented his work on developing exposure factors

for ecological risk assessment, and Jack Gentile of the Environmental Protection Agency's Risk Assessment Forum discussed the development of ecological risk assessment guidelines by the agency.

The topic of the November meeting will be uncertainty analyses. A panel discussion is planned to examine the application of uncertainty analyses with regard to the EPA's new Exposure Assessment Guidelines.

Activities being planned for 1993 include an interactive dramatization of the relationship between scientists, risk assessors, CEOs, politicians, and risk managers, which is being coordinated by the chapter vice president, Alan Eschenroeder. New state policies for Massachusetts will be among the meeting topics in 1993.

### Ohio Chapter

The Ohio Chapter held its third meeting for this year on October 23 at the University of Cincinnati's Kettering Laboratory. The meeting, organized by chapter councilor Jon Reid of the University of Cincinnati and co-sponsored by the Environmental Protection Agency (EPA), was on "Composting: Assessing Possible Health Risks." The speakers and their topics were: Director Terry Harvey of EPA's Environmental Criteria and Assessment Office on "EPA's Interest in Composting"; Ron Herrmann of the University of Cincinnati on "A Microbiologist's View of Composting"; Chuck Gerba of University of Arizona on "Pathogens in Compost: Are There Risks?"; Jim Ryan of EPA on "Other Toxic Entities in Compost: Assessing the Potential Risks"; Janet Rickabaugh of the University of Cincinnati on "Observation at Full Scale Composting Facilities"; Eletha Brady-Roberts of EPA on "The EPA's Literature Review of Composting"; and Larry King of Procter & Gamble Co. on "The Regulatory Arena: Past, Present, and Future."

The program also included viewing a videotape developed by the Solid Waste Composting Council on municipal solid waste composting in the United States and a round table discussion of questions from the audience. For information on upcoming chapter meetings, call the chapter president Bert Hakkinen (see box) or president-elect Michael Dourson at (513) 569-7533.

At the SRA annual meeting in San Diego, the Ohio Chapter is sponsoring an exhibition of risk analysis-related software and databases called RiskWare '92. The

### Chapter Representatives to Meet in San Diego

A representative from each SRA chapter is invited to attend a breakfast meeting at the annual meeting in San Diego at 8 a.m. Tuesday, December 8. The location of the breakfast will be listed in the conference program.

The meeting agenda includes the following: establishing relationships with local chapters of other professional societies, maintaining chapter directories, obtaining SRA assistance in providing nationally known speakers for local chapter events, and simplifying coordination of chapter elections by standardizing election dates. Financial issues such as tax-exempt status and maintaining chapter bank accounts, which the SRA Secretariat currently assists with, also will be discussed.

For more information about the meeting or to add to the agenda, contact meeting chairman Rae Zimmerman at New York University by telephone at (212) 998-7432 or by fax at (212) 995-3890.



chapter organized and sponsored the first RiskWare in 1990 as a local conference and exhibition. SRA then asked the Ohio Chapter to host the follow-up event RiskWare '91 at the annual meeting in Baltimore. This year, RiskWare '92 is being organized for the annual meeting in San Diego by Ohio Chapter members Steve Lutkenhoff of EPA, Bert Hakkinen of Procter and Gamble Co., Rick Hertzberg of EPA, and Ron Marnicio of Ebasco Environmental. Assisting the chapter is Sue Burk of the SRA Secretariat's office.

The chapter also is conducting a survey of the interests and areas of expertise of chapter members and other attendees of recent meetings, primarily for use in selecting topics for future meetings. Also in progress are the nominations and elections of the 1993 chapter officers, including president-elect, treasurer, and one councilor. Anyone interested in becoming a member of the chapter (annual dues are \$5.00) or being placed on the chapter's mailing list should write chapter secretary Hallie Serazin at Ebasco Environmental, Suite 2000, 5000 Bradenton Avenue, Columbus, Ohio 43017, or call her at (614) 761-2010.

### Philadelphia Chapter

The new executive committee of the Philadelphia Chapter has planned two dinner meetings and a symposium for the chapter during the 1992-93 academic year. Committee members are the chapter officers: President Eileen M. Mahoney of Mahoney Associates Inc., President-Elect Michael Jayjock of Rohm and Haas, Past President Irv Rosenthal of the University of Pennsylvania, and Secretary/Treasurer Robin Streeter of Environmental Resources Management Inc.

The first dinner meeting was held at the University of Pennsylvania's Faculty Club in October. Bill Shade of Rohm and Haas spoke on "Ecological Risk Assessment for New Product Development." The next dinner meeting is scheduled at the

### Eastern Europe

*(Continued from page 14.)*

we worked together outlining a manual aimed at helping local decision makers in Eastern and Central Europe make appropriate choices regarding environmental protection.

In Warsaw, I met with Director Andrew Kassenberg of the Institute for Sustainable Development and learned

## U.S. Chapter Contacts

**Columbia-Cascades:** Jim Dukelow (president), (509) 376-7074.  
**East Tennessee:** Jan Borkowski (president), (615) 435-3232.  
**Greater Pittsburgh:** Jeanette Trauth (president), (412) 624-0968.  
**Lone Star:** Ben Thomas (president), (713) 520-9900.  
**Metropolitan:** Miriam de Salegui (president), (212) 749-7961.  
**Michigan:** Douglas Kononen (president), (313) 986-1351.  
**National Capital Area:** Rebecca Klemm (secretary), (202) 667-5244.  
**New England:** Charlie Menzie (president), (508) 453-4300.  
**Northern California:** Thomas McKone (secretary), (510) 422-7535.  
**Ohio:** Bert Hakkinen (president), (513) 627-1521.  
**Philadelphia:** Eileen Mahoney (president), (215) 242-4388.  
**Research Triangle:** Julie Kimbell (pres.-elect), (919) 541-2070 (ext. 364).  
**Rocky Mountain:** Ralph Grover (president), (303) 450-0005.  
**Southern California:** Bob Mulvihill (president), (310) 640-1050.

same location on January 12, 1993, with Frederick Talcott of the Environmental Protection Agency's Office of Policy, Planning, and Evaluation speaking on "Incorporating Uncertainties into EPA's Decision Making."

A symposium is scheduled for May 15, 1993, on "Risk Management Issues for Sustainable Development" as part of a presidential symposium sponsored by the University of Pennsylvania. Topics will include regulatory issues associated with global warming.

The executive committee also plans to publish a chapter newsletter and membership directory.

Anyone who would like to receive a notice for the upcoming chapter meetings or is interested in becoming a member of the chapter should contact Eileen Mahoney (see box) or call Robin Streeter at (215) 524-3845.

### Research Triangle Chapter

The October meeting of the Research Triangle Chapter featured Gustavo Arcia,

that he is interested in using risk analysis methods in pursuing the sustainability principle. I talked with several people from both Warsaw and Gdansk who expressed interest in forming SRA chapters.

As I flew home after my final stop in St. Petersburg, Russia, I thought about the world I had just visited. Surely SRA can help to develop the wonderful potential that exists in these countries.

who is with the Center for International Development of the Research Triangle Institute. Arcia spoke on "Helping the Poor Remain Poor - The Role of Risk and Uncertainty in Developing Countries."

### Southern California Chapter

The Southern California Chapter is actively supporting the upcoming 1992 SRA Annual Meeting in San Diego. The technical program chair of the meeting, Douglas Orvis, and the co-chairs of the technical sessions, Robert Mulvihill and Sergio Guarro, are Southern California chapter members. Several other members will participate in the Process Safety Management and Risk Management Plans Workshop (see article on page 5).

A chapter technical meeting was held on November 9 at the Revere House Restaurant in Tustin, California. Karl Fleming of PLG Inc. spoke at the meeting on the relationships of design features to nuclear power plant risks.

### Discussion: Natural Disasters and Technological Risks

All interested persons attending the 1992 SRA Annual Meeting are invited to an informal gathering on Sunday, December 6, 12:30-4:30 p.m., to discuss the similarities and differences in risk analyses for natural disasters and technological hazards. William R. Freudenburg, University of Wisconsin-Madison, will be the moderator.

## Risk-Related Happenings

### APA to Publish Directory

George Cvetkovich of Western Washington University, who serves as scientific liaison between SRA and the American Psychological Association (APA), is now coordinator of the APA's International Network on Psychology and Environmental Problems (INPEP). Psychologists who would like to be listed in the first INPEP directory should send their name, address, telephone and fax numbers, electronic address, and areas of interest *by March 30, 1993*, to Cvetkovich at the address of WISOR/Psychology, Western Washington University, Bellingham, WA 98226-9089, or e-mail address Cvet@WWU.edu. The address of INPEP's electronic bulletin is ENVBEH-L@polyvm.

Cvetkovich recently co-edited with Timothy C. Earle the December 1992 issue of the *Journal of Social Issues* on responses to environmental hazards, and a special issue of the *Journal of Cross-Cultural Psychology* on psychology and risk. Several SRA members contributed to both volumes.

### New Doctoral Program Offered

Worcester Polytechnic Institute now offers a Ph.D. in fire protection engineering at its Center for Fire Safety Studies. The doctoral program requires 90 semester hours of post-graduate credit, including 30 hours of dissertation. The remaining 60 hours of course work builds upon the foundation of 11 fire protection engineering graduate courses and includes engineering, science, and mathematics courses offered by other academic departments.

The doctoral program is expected to produce high-level scholars trained specifically in the field of fire protection engineering to teach FPE courses, write textbooks, and perform research in industry and government laboratories worldwide.

### National Safety Week in June

From June 6-12, 1993, the American Society of Safety Engineers (ASSE) will sponsor its annual National Safety Week, which was conceived in 1986 to draw public attention to the critical role that safety professionals play in preventing industrial accidents, eliminating hazards, reducing insurance costs, and saving lives.

ASSE also announces the availability of its 1992-93 Resource Guide, which provides quick access to information on ASSE's many programs, products, and services, such as advance information on ASSE's Professional Development Conference and Exposition (see calendar of events).

For more information about National Safety Week or to order a Resource Guide, contact the ASSE Marketing and Public Relations Department at 1800 East Oakton Street, Des Plaines, Illinois 60018-2187. Telephone: (708) 692-4121, ext. 18, fax: (708) 296-3769.

### CAST Report Now Available

A report on how U.S. farmers and foresters should prepare for global climate change is available from the non-profit Council for Agricultural Science and Technology (CAST) in Ames, Iowa.

Called *Preparing U.S. Agriculture for Global Climate*, the 96-page report proposes ways to reduce emissions of CO<sub>2</sub>, methane, and nitrous oxide, which are often called greenhouse gases because they absorb longwave, invisible radiation from the sun. Suggestions include removing marginal farmland from tillage, using more efficient biotechnologies on farms, and replacing fossil fuel in part with biomass fuel.

"U.S. agriculture's contribution to greenhouse gas emissions is less than 1 percent of the global forcing of climate change by CO<sub>2</sub>, methane, and nitrous oxide," CAST reports. "But because farming is mostly outdoors, agriculture is more sensitive to climate than any other sector of the U.S. economy. Agriculture could slow global climate change through somewhat lessened emissions and especially by stashing away carbon or displacing fossil fuels."

A group of 11 scientists, chaired by Paul Waggoner of the Connecticut Agricultural Experiment Station in New Haven, produced the report.

To order a copy of Report No. 119, send \$15 to CAST, 137 Lynn Avenue, Ames, Iowa 50010-7197, or call (515) 292-2125.

### 1993 Interagency Conference on Risk Assessment

For the 10th anniversary of the National Academy of Sciences' risk assessment paradigm, an interagency conference titled "The Risk Assessment Paradigm After 10 Years: Policy and Practice Then, Now, and in the Future" will be held April 5-8, 1993, in Dayton, Ohio, at the Hope Hotel and Conference Center located on Wright-Patterson Air Force Base.

The goals of the conference are: (1) to acquaint individuals with the basics of the risk assessment process as originally developed 10 years ago by the National Academy of Sciences, (2) to highlight current issues in risk assessment, emphasizing the strengths and weaknesses of the current paradigm and areas needing change, and (3) to present and discuss current research related to improving the risk assessment process.

The conference features invited presentations by noted individuals in the field and a poster session for studies relevant to the conference theme. *Individuals interested in presenting a poster should contact the conference coordinator. Abstracts must be received by February 2, 1993.*

To obtain further information, write to Lois Doncaster, Conference Coordinator, ManTech Environmental Technology Inc., P.O. Box 31009, Dayton, Ohio 45437-0009, or call her at (513) 256-3600, ext. 212.

### Systems Applications International Wins EPA Contract

Systems Applications International Inc., a subsidiary of ICF International, has been awarded a three-year contract worth approximately \$3.5 million to provide scientific and technical support to the Environmental Protection Agency's Office of Air Quality Planning and Standards. The company will support the agency's efforts to evaluate potentially toxic air pollutants and develop appropriate regulatory strategies.

## Positions Available

### Regulatory Toxicologist

The Effects Evaluation Division of the Texas Air Control Board located in Austin, Texas, currently has several openings for health scientists specializing in regulatory toxicology. These positions offer individuals an opportunity to interface between science and policy management in a regulatory setting.

Individuals are responsible for evaluating toxicologic and epidemiologic data to identify potential adverse health and welfare effects associated with exposure to air contaminants. Additionally, these positions involve serving as health effects experts at public meetings, hearings, and court proceedings. Excellent oral and written communication skills are necessary. The ideal candidate will possess an M.S. or Ph.D. degree with a strong background in toxicology, epidemiology, pharmacology, public health, environmental science, risk assessment, or closely related specialties. Interested applicants should call JoAnn Wiersema, Director, at (512) 908-1782.

### Scientist, Food Safety

SCIENTIST sought for a national public-interest group to work on food safety issues. Related Ph.D. and advocacy experience preferred. Salary range is \$35,000 to \$45,000. Non-smoking office. Send resume, salary history, and writing samples to J. Douglas, the Center for Science in the Public Interest, Suite 300, 1875 Connecticut Avenue N.W., Washington, D.C. 20009-5728.

## Position Sought

### European Scientist Desires Employment

Scientist from a newly emerging country in Eastern Europe seeks employment with a company or institution based in another country. He is willing to participate on a project as a visiting scientist or work at home, using modern communication technologies and computers. His work interests and experience are in risk analysis, energy, physics, petroleum engineering, technology, science, ecology, and emergency management. He has a bachelor's degree in physics, a master's degree in nuclear physics, and a Ph.D. in reservoir engineering.

If anyone can offer assistance in finding employment for this colleague, who has been a member of SRA since 1985, write to the editor of RISK newsletter, at Tec-Com Inc., 1303 Wilson Road, Knoxville, TN 37912, or call (615) 927-4640.

### Risk Commission

(Continued from page 7.)

Thompson is an environmental and health safety attorney with Perkins Coie in Washington, D.C. He co-chairs Perkins Coie's Environmental and Natural Resources Practice Group and specializes in health safety and environmental cases, including those that involve risk assessment issues.

"The risk commission has a broad mandate," Thompson said. "It isn't just concerned with air pollution. It covers carcinogens from food additives to air pollutants to chemicals at a work site."

## Calendar of Events

March 14-18, 1993. SOCIETY OF TOXICOLOGY ANNUAL MEETING; New Orleans Convention Center, New Orleans, Louisiana. Preliminary program of meeting will be available in December. Continuing education courses will be offered on March 14, including both basic and advanced level risk assessment courses. For more information, contact the Society of Toxicology, Suite 1100, 1101 14th Street, N.W., Washington, D.C. 20005-5601. Telephone: (202) 371-1393, fax: (202) 371-1090.

April 7-8, 1993. TWENTY-NINTH ANNUAL MEETING OF THE NATIONAL COUNCIL ON RADIATION PROTECTION AND MEASUREMENTS (NCRP), Crystal City Marriott, Arlington, Virginia. Principal scientific session is "Radiation Science and the Public: Can the Gap Be Bridged?" For additional information, contact NCRP, Suite 800, 7910 Woodmont Avenue, Bethesda, Maryland 20814. Telephone: (301) 657-2652, fax: (301) 907-8768.

April 25-28, 1993. THE SECOND INTERNATIONAL SYMPOSIUM ON UNCERTAINTY MODELING AND ANALYSIS (ISUMA'93), Center of Adult Education, University of Maryland, College Park, Maryland. Symposium objective is to bring together researchers from academic, governmental, and industrial institutions to discuss new developments and results in the field of uncertainty modeling and analysis, including probabilistic methods, Bayesian approaches, fuzzy reasoning, and risk management. For more information, contact Professor Bilal M. Ayyub, Department of Civil Engineering, University of Maryland, College Park, Maryland 20742. Telephone: (301) 405-1956, fax: (301) 314-9320, E-mail: ba15@umail.umd.edu.

June 19-25, 1993. 32nd ANNUAL ASSE PROFESSIONAL DEVELOPMENT CONFERENCE AND EXPOSITION, Loews Anatole Hotel, Dallas, Texas. The conference is sponsored by the American Society of Safety Engineers to expand the knowledge and improve the expertise of safety practitioners worldwide. It will explore a wide range of safety and health topics from total quality management to confined space hazards to environmental safety issues. For more information contact ASSE, 1800 East Oakton Street, Des Plaines, Illinois 60018-2187. Telephone: (708) 692-4121, fax: (708) 296-3769.

July 11-14. EMERGENCY PLANNING '93 - 2nd INTERNATIONAL CONFERENCE, Lancaster University in Lancaster, United Kingdom. Conference sponsors have issued a call for papers on all aspects of emergency planning and disaster management. Abstracts must be received by March 19 and camera-ready copy of selected papers by May 17. The conference will include parallel sessions and post conference workshops. For more information, write Emergency Planning '93; Conference Office; Bowland College; Lancaster University; Bailrigg, Lancaster LA1 4YT; United Kingdom; or call 0524-65201, ext. 2180, or fax 0524-843-695.

October 18-20, 1993. FOURTH ANNUAL CONFERENCE OF SRA-EUROPE, Rome, Italy. Conference theme is "European Technology and Experience in Safety Analysis and Risk Management 10 Years After the Seveso Directive." Session topics are emerging trends in European safety analysis and risk management, risk analysis aiding decision making in industry, risk analysis aiding decision making in governments, risk communication principles and experiences, quality management, safety management, and insurance. Full papers will be published in conference proceedings distributed at meeting. Abstracts (300 words) should be submitted by November 30, 1992, to conference secretariat. To submit abstracts or request more information, contact Dr. Paolo Vestrucci, N.I.E.R., Via S. Stefano 16, 40125 Bologna, Italy. Telephone: 39.51.239728, fax: 39.51.227824. (Note: This conference was originally scheduled for June 21-23, 1993.)



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## Risk Courses Offered

June 1-4, 1993. ELEVENTH SUMMER INSTITUTE IN RISK MANAGEMENT IN ENVIRONMENTAL HEALTH AND PROTECTION. On environmental health risk management, quantitative risk assessment, and risk communication for chemical wastes.

June 22-25, 1993. ENVIRONMENTAL IMPACT ASSESSMENT: PROCESS AND PROCEDURES. On techniques and procedures for conducting and evaluating impact assessments for development projects and plans.

July 26-30, 1993. ENVIRONMENTAL LAW. On environmental laws pertaining to liability, property transfers, right-to-know, citizens suits, enforcement, and the development of health and environmental standards.

Above courses given at Robert F. Wagner Graduate School of Public Service, New York University, New York, New York. For more information contact Prof. Rae Zimmerman, Course Director, Robert F. Wagner Graduate School of Public Service, New York University, 4 Washington Square North, New York, New York 10003. Telephone: (212) 998-7432 or 7430, fax: (212) 995-3890.

## 1992 SRA Sustaining Members

The Society for Risk Analysis expresses appreciation to the following organizations that supported the Society as sustaining members during 1992:

Amoco Corp., Chicago IL  
Chevron Environmental Health Center, Richmond, CA  
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Gillette Co., Boston, MA  
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