

RISK *newsletter*

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1988 D.C. Meeting to Focus on New Administration Policies

The Society for Risk Analysis will hold its 1988 Annual Meeting at the Mayflower Hotel in Washington, D.C., October 30–November 2. Meeting the week before national elections and adopting the theme “Risk Analysis: Prospects and Opportunities,” SRA members will address a number of topics confronting the new administration during the next four years. Among them will be providing the public with a knowledge base on vital issues involving risks and ensuring that government agencies making risk decisions have both the best data and the most reliable methodology available.

The 1988 meeting is the second to be hosted by SRA’s National Capital Area Chapter. The chapter also hosted the 1985 meeting, and some members are serving on an annual meetings committee for a second time.

The 1988 committee consists of General Chairman Constantine Zervos and the NCA Chapter’s officers: Jerry R. Chandler, president; Stephen L. Brown, president-elect; Kathleen D. Knox, secretary; and Lee Abramson, treasurer. Other members of the committee are Paul Price, with responsibility for publicity, and Ron Coppock. In addition, Michael Gough, Carol Henry, Janice Longstreth, and Daniel Byrd have been working with the committee. President-elect Richard C. Schwing is chairman of the Annual Meetings Committee.

Plenary Session

The meeting will open with a Monday morning plenary session at which Joseph F. Coates will speak
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Schwing Is SRA President



Richard C. Schwing

President-elect Richard C. Schwing, who during the current year has been serving as the chairman of the SRA Annual Meetings Committee, will be installed as the society’s eighth president at its 1988 annual meeting in Washington, D.C.

Schwing is a principal research engineer in the Operating Sciences Department of the General Motors Research Laboratories. At GM, he is responsible for methods development for a variety of multidisciplinary research programs involving environmental impact studies, technological forecasting and social change. He coordinates the work of economists, operations researchers, mathematicians, and psychologists in risk/benefit, cost/benefit, and cost/effectiveness research on policies that impact on safety, noise pollution, air pollution, and fuel economy. In 1983 he was awarded GM’s John M. Campbell Award for his contributions to science.

In the early 1970s, Schwing was one of four persons chosen to organize a new social science department within the corporation.

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Election Results Announced at Annual Meeting

The results of the recent SRA election of a president-elect and three members of the council will be announced at SRA's annual business meeting to be held at 5:30 PM on Monday, October 31, at the Mayflower Hotel in Washington, D.C. The present secretary, Frances M. Lynn, and treasurer, Joseph Fiksel, both elected last year for two-year terms, will remain in office during the coming year.

President-elect: Garrick vs. Swanson

The candidates for president-elect are B. John Garrick and Steven M. Swanson, both of whom have held committee chairs and national or local offices throughout the society's eight-year history.

Garrick is president and chairman of the board of Pickard, Lowe and Garrick, Inc., Newport Beach, California. He received his Ph.D. in engineering and applied science at the University of California, Los Angeles. His specialty is in the development and implementation of quantitative methods of risk analysis, risk management, and reliability analysis in the fields of nuclear power, aerospace and chemical processing.

Swanson is vice president and chief operating officer of Clement Associates, Inc., a firm specializing in environmental and human health risk assessment and risk management strategies for private and public sector clients. He has a Ph.D. in economics from the University of Utah, and previously was the director of Health and Environmental Affairs for the American Petroleum Institute. Swanson received the SRA Distinguished Service Award for 1987.

Three Council Positions

The candidates for the three council positions, each for three-year terms, are paired as follows: Donald G. Barnes vs. Joellen Lewtas; David William Gaylor vs. Catherine St. Hilaire; and Branden B. Johnson vs. James D. Wilson.

Donald G. Barnes has a Ph.D. in physical chemistry from Florida State University (1967). He is science advisor to the Assistant Administrator for Pesticides and Toxic Substances in the Environmental Protection Agency and acting director of the agency's Science Advisory Board. He is a charter member of SRA. *(Continued on page 13.)*

1988-89 President

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Among other things, the department was charged with evaluating the effect of social pressures on the use of energy and natural resources and anticipating changes desired by the public. It was also to assess the externalities of corporate activities. In conjunction with this work, Schwing and others organized GM's Research Colloquium of Society and Systems in 1973.

The new president has also been active in organizing symposiums to examine risks. In 1979, he collaborated with W. A. Albers, Jr., to organize a symposium on "Societal Risk Assessment: How Safe Is Safe Enough?" In 1984, he joined with L. Evans to organize a symposium on "Human Behavior and Traffic Safety." He also organized two panel discussions for the Society of Automotive Engineers—one on

risk analysis (in 1980) and another on vehicle emissions (in 1979).

Schwing is a member of the National Research Council Committee on Control and Recovery of Hydrocarbon Vapors from Ships and Barges and an advisor to an Office of Technology Assessment study on Maintaining Safety in the Aviation and Motor Carrier Industries in a Competitive Environment. He is past president of the International Association for Impact Assessment (1984-85). He has also been a member of Resources for the Future (an EPA Benefits Research Advisory Group), the National Association of Manufacturers Risk Analysis Task Force, and the National Commission on Air Quality Benefits Panel.

Schwing received all his degrees in chemical engineering (B.S., M.S. and Ph.D. from the University of Michigan in 1957, 1959, and 1963),

and his early work at GM was on the chemical stability of refrigerant-lubricant mixtures and the development of synthetic lubricants for refrigeration equipment. However, his interests soon expanded to include interdisciplinary communications on urban stress, value change, consumer preference, risk analysis, technology assessment, etc. As a result, he has been the author, co-author or editor of a number of publications dealing with various topics crossing disciplinary lines. He has also designed and taught Oakland University courses on automotive air pollution and on the automobile and the environment.

The new president will assume the office of president from outgoing President Vincent T. Covello at the society's business meeting on October 31.

Annual Meeting

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on "Risk and Risk Analysis—Now to the Third Millennium." Before organizing his own interdisciplinary think tank, J. F. Coates, Inc., the speaker served as assistant to the director of Congress' Office of Technology Assessment. He has also worked with the Institute for Defense Analysis, the National Science Foundation, and industry.

Monday Sessions

With approximately 200 papers to be presented by representatives from 10 nations during the three-day meeting, as many as five sessions will be held simultaneously. Individual topics to be addressed Monday morning include statistical approaches to risk analysis, societal acceptance of controversial facilities, the economic dimension of illnesses spread through food and water contamination, and epidemiological and toxicological studies.

Two Monday afternoon sessions will focus on emergency planning for industrial accidents such as chemical spills, toxic releases, and nuclear power plant accidents. Other sessions will address risk analyses of large engineered systems (e.g., nuclear waste transport ships, shuttle trains through the channel tunnel, and reactor vessels), biostatistics as applied to human cancer predictions, and reports on community participation in risk assessments. In addition, specific case studies will be presented, as, for example, assessments of the risks associated with the Army's chemical stockpile disposal program and of the risks inherent in the demilitarization of the U.S. chemical weapons stockpile.

Business Session

The society's annual business session will be held at the Mayflower Hotel at 5:30 PM, Monday evening, October 31. At that time outgoing President Vincent Covello will pass the gavel to incoming President Richard C. Schwing, and results of the recent election will be announced. Reports on society business will also be presented.

CAMEO: Special Session

Two special sessions will be held at 7:30 Monday evening. One, organized by Joseph Fiksel, will consist of a presentation on "CAMEO: A Computer Aid for Emergency Response," by Jean Schneider of the National Oceanic and Atmospheric Agency.

Board Certification for Risk Analysts

A second Monday evening session has been organized by Robert DeHart II, an engineer with Union Carbide Corporation and a recent past president of the Board of Certified Safety Professionals (BCSP). During the session, representatives from BCSP and two other certification organizations, the American Academy of Environmental Engineers and the American Board of Industrial Hygienists, will discuss "The Need for Specialty Certification for Risk Analysts."

Tuesday Sessions

Tuesday's program will feature five of eight special sessions that have been organized for the meeting around single topics. Three morning special sessions are "Health Assessments at Superfund Sites," "Social Science Innovations in Risk Analysis Methods," and "Building Trust Amid Uncertainty." The afternoon's special sessions are on "Uncertainty in Human Input Parameters in New Risk Assessment Models" and "U.S. Transfers of

Technological Hazards to the Third World."

Other Tuesday morning sessions will address emerging concepts for estimating risks, the risks of operating incinerators and nuclear waste processing facilities, and global risks such as climate change. Afternoon sessions will be continuations of earlier subjects: biostatistics, communicating risk, and Superfund-related issues. Risk management methods will also be addressed, together with their application to specific cases.

Poster Session

Eleven papers will be featured at a Tuesday noon poster session, each addressing a separate topic. One paper proposes reclaiming the "civil" in engineering, while others address such topics as risk perceptions in Mainland China, monetary versus non-monetary risks, and hazardous waste site long-term health risks.

Wednesday Sessions

A full program is scheduled for Wednesday, with morning sessions on carcinogenic thresholds, public perceptions and attitudes toward risks, pharmacokinetic modeling, political considerations, and special problems. An afternoon session entitled "Global and International Issues" will include topics such as China's nuclear development, the management of hazardous chemicals in Thailand, and risk management in the Pacific region.

Banquet, Luncheon

The traditional meeting banquet will be held on Tuesday evening at 7:30 PM, and the luncheon will be held at noon on Wednesday. Neither event will feature a speaker this year.

SRA-Europe Holds First Conference

SRA-Europe, the European section of the Society for Risk Analysis, will sponsor its first conference at the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria, on November 10-11, 1988 (see the January 1988 edition of *RISK newsletter*, page 19, for the announcement of the conference). Chartered as SRA's first section at the society's 1986 annual meeting in Boston, SRA-Europe seeks to address risk problems in a broad sense and to develop close liaison with other organizations in Europe dealing with specific risk issues. It has already formed a cooperative effort with the European Safety and Reliability Association (ESRA), which also was organized in 1986.

Goals of the Section

SRA-Europe has about 140 members representing 17 European countries and hopes to increase its membership to 200 at the November conference. The goals of the section are to promote knowledge and understanding of risk analysis techniques, to facilitate communication among those engaged in risk analysis, and to disseminate information and advance the state of the art in all aspects of risk analysis. The section especially emphasizes interaction between professionals from industries, governments, universities and research institutes to improve the practical usefulness of risk analysis. Membership is open to anyone trained in a discipline that can contribute to risk analysis. Following the November conference, biannual meetings of the section are planned.

The Executive Committee

SRA-Europe's Advisory Committee consists of 26 members representing a wide range of disciplines and occupations. Its role is to assist an elected management board (the Executive Committee), whose members are as follows:

- Pieter Jan Stallen, Centre for Technology and Policy Studies, TNO, PO Box 541, 7300 AM Apeldoorn, The Netherlands.
- M. Poumadere, Institute Symlog, 8 Rue du Moulin de Cachan, F-94230 Cachan, France.
- R. A. Cox, Technica Ltd., Lynton House 7/12, Tavistock Square, London WC1 H9LT, United Kingdom.

- G. Kroemer, IIASA, A-2361 Laxenburg, Austria.
- H. Otway, Joint Research Centre Commission of the European Communities, 2120 ISPRA (Varese), Italy.
- H. Ibrenk, Senter for Industriforskning, P.O. Box 330, 0314 OSLO 3, Norway.
- H. Bohnenblust, Ernst Basler & Partners, CH-8702 Zollikon-Zurich, Switzerland.

Laxenburg Conference

The preliminary program for the Laxenburg conference indicates that 58 papers will be presented by representatives of 18 different countries—Turkey, the Netherlands, Romania, the United States, Morocco, France, the German Federal Republic, the United Kingdom, Finland, Italy, Yugoslavia, Denmark, Hungary, Sweden, Japan, Switzerland, Greece and Austria. The conference theme is "The Utility of Risk Analysis in Decision Making." Three parallel sessions held during the two-day meeting will address the following topics (session chairs in parentheses):

- Human Error Modelling (M. Poumadere, France).
- Computer-Aided Risk Analysis (Poumadere).
- Dealing with Uncertainty in Risk Analysis (E. Blokker, Netherlands).
- Assessing the Quality of Risk Analysis (A. Cox, United Kingdom).
- Health and Environmental Risk Assessment (chair not yet announced).
- Communicating Risk to the Public (H. Otway, Italy).
- Assessment in Different Social Contexts (J. Linnerooth, Austria).
- Institutional Effects on Risk Assessment (B. Segerstahl, Finland).
- General Policies of Risk Assessment (H. Bohnenblust, Switzerland).
- Applications of Risk Assessment (A. Cohen, United Kingdom).
- Risk Assessment in International Perspective (C. Stern, Denmark).

The first business meeting of the section's membership will be held on Friday, November 11, 11:45 AM to 12:30 PM. (Continued on page 7.)

SRA-Japan Section Inaugurated

In a July 25 letter to SRA President Vincent T. Covello, Saburo Ikeda of the University of Tsukuba reported that SRA-Japan was "successfully inaugurated on June 25, 1988." In an earlier letter, Ikeda, who served as secretary of the Preparation Committee for SRA-Japan, had notified Covello that the initial meeting of the section would take place in Tokyo on June 25. A return telex from Covello welcomed the new section to the society.

Ikeda stated that the section already has about 90 members, of which 45 are full members of SRA. During the inaugural meeting, Tomitarou Sueishi of Osaka University was elected chairman of the council. Other officers are Eizi Yokoyama of the Ministry of Welfare and Health, who was elected vice chairman of the council, Hiromasa Amano of the Central Research Institute of Electric Power Industry, who was elected treasurer, and Ikeda, who remains as secretary.

Others elected to serve on SRA-Japan's first council are the following:

- Yukihiro Asami, University of Fukuoka.
- Masayuki Ikeda, Tohoku University.
- Katsuyoshi Ishzaki, Ministry of Construction.
- Yoshifusa Kitabatake, University of Tsukuba.
- Katsuyoshi Kuroda, Kyoto University.
- Sadaki Kobayashi, National Institute of Radiological Sciences.
- Masaru Tanaka, The Institute of Public Health.
- Masayuki Nakamura, Lake Biwa Research Institute.
- Yuzou Hayashi, National Institute of Hygienic Sciences.
- Hirotada Hirose, Tokyo Women's Christian University.
- Nozomi Matsubara, University of Tokyo.
- Tohru Morioka, Osaka University.

Annual Meeting Planned

SRA-Japan will hold its first annual meeting on December 10, 1988, at the National Institute of Public Health in Tokyo.

Persons wishing to contact SRA-Japan should write to: Professor Saburo Ikeda, Institute of Socio-Economic Planning, The University of Tsukuba, Sakura, Ibaraki 305, Japan. Phone: 0298-53-5182. Telex: 3652580 Untuku J.

European Conference on Hazard Communication Scheduled for May 30

The Commission of the European Communities has announced that a European conference using the theme "Communicating with the Public About Major Accident Hazards" will take place in Varese, Italy, May 30 to June 1, 1989. The conference is planned as a response to the Seveso Directive, which specifies that members of the public liable to be affected by major accidents be informed of safety measures and instructed on how they are to behave in the event of an accident.

The Directive raises many theoretical and practical issues involving credibility, the need for confidentiality, the public's right to know, the role of the media, legal implications in regard to liability, and the history of public response to hazard information. The sponsors are particularly interested in receiving papers which analyze the roles, information needs, capabilities and constraints of particular actors and their perceptions of other actors.

The Commission welcomes the widest possible participation and is able to pay travel and subsistence expenses for some authors. Those wishing to submit papers should send a one-page abstract by December 15 to The Secretariat, Communications Conference, Building 21, Joint Research Centre, Commission of the European Communities, I-21020 Ispra (VA), Italy. Persons who desire financial assistance should state their need when submitting the abstract.

A Suggested Role for the Society for Risk Analysis in Developing Countries

Vlasta Molak
International Coordinator, SRA

We often hear that developing countries need to build technology and cannot afford to think about safety issues and the protection of the environment. The officials in such countries frequently argue that environmental controls are too expensive. But a careful consideration of the facts indicates that developing countries cannot afford *not* to think about safety issues and the environment.

Preventing Tragedies

Several major accidents resulting from the failure of technological systems have demonstrated the consequences of not thinking about safety and environmental issues. The Bhopal and Chernobyl tragedies could have been prevented, or at least limited, if simple safety features had been installed before these systems were put into use.¹ The scarcity of investment capital in developing countries makes the protection of expensive installations especially important, and, of course, it is even more important to safeguard human life and the environment. The application of risk analyses from the initial planning stage can show ways for providing the protection.

Unforeseen Consequences

Perhaps more significant are the risks posed by technologies whose adverse effects are slow in coming but greater in consequence. For example, electric power plants are necessary, but sulfur dioxide emissions from the burning of coal affect human health adversely and cause acid rain that damages trees and buildings. In the long run, it might be far cheaper to install scrubbers to limit emissions. Consider, also, how the improper use of pesticides, herbicides and fertilizers in developing countries has taken its toll, both in human lives and in ecological damage.² In the Upper Nile, heavy use of herbicides has produced both resistant weeds and polluted water. In parts of Africa regional economies have collapsed because the indiscriminate use of insecticides has created resistance in insects whose depredations have made it unprofitable to grow cotton.

The Example of Aswan

Although built to improve the control of the Nile, the Aswan dam is being clogged by the very soil that used to be carried down river, where it fertilized the land. Since this deposition has ceased, the Nile delta is suffering erosion that is destroying beaches and roads. And farmers have to buy chemical fertilizers or pay for the silt that used to be a gift of the river. The dam is a striking example of a technology imported from an advanced nation with great fanfare. But the technology was totally inadequate to the needs of the developing country and eventually it may do more harm than good.

Risk Awareness in the Past

Though risk analysis is a term established only a decade ago, the practice of assessing risks is ancient. Five thousand years ago, in the Tigris-Euphrates valley, Asipu practiced a form of risk assessment and risk analysis.³ In one American Indian tribe, no important decision was made until its effect on the seventh generation was considered. We may not be wise enough to predict how a decision will affect the seventh generation of our descendants, but we are able to think in terms of a second generation forty to fifty years in the future.

Risk Awareness in the Present

The pace of Western civilization does not encourage policies that fail to yield instant results. Companies look for a quarterly profit. Elected officials seldom see beyond their term of office. But there are signs of a change. Laws calling for environmental impact statements point toward a real concern for the future and a willingness to think of ways in which our technology puts it at risk. The World Bank, which finances many large-scale projects in developing countries, has emerged as a leader among international development agencies in promoting environmental concerns.⁴

Role of SRA

During its eight years of existence, SRA has seen more and more public acceptance of its activities.

Though we in the United States have a long way to go in solving problems created by technology, we are able to estimate the risks. Currently, an important part of any new venture is an analysis of its risks as well as its benefits. But in developing countries, new technologies are introduced without a careful assessment of their risks; nor is it certain that the potential buyers are able to grasp the nature of the risks, even if the purveyor is candid enough to mention them. In such circumstances SRA can play an important role: by forming local sections in developing countries, by organizing meetings and conferences in those countries, and by maintaining contacts with them. While the local sections would operate independently, adjusting their activities to the needs of their country, SRA could help them by providing written information, by direct visits of individual members who happen to be in the area, and by donations of seed money. For example, the leaders of local sections might be granted free membership in SRA so that they could receive the journal and newsletter and possibly participate in the annual meetings.

Coordination

A flexible and stable mechanism should be established for coordinating international sections. As SRA's international coordinator, I hope to keep in regular contact with the leaders of foreign sections and to facilitate the flow of information. SRA members travelling abroad could contact me to

obtain information about the SRA section in a particular country. I might be able to arrange an ad hoc meeting at which the SRA member could give a lecture. When foreign members come to the USA they could contact me (or any succeeding international coordinator) for help in arranging a professionally productive visit. With international computer networks, these tasks could be handled efficiently.

The Opportunity

The formation and encouragement of SRA sections in developing countries depends upon the foresight and the leadership of the society. Since much larger issues than the formation of another section may be at stake, it seems to me that a small investment of time and money may have long-reaching positive effects.

1. H. Inhaber, "Risk in Developing Countries," *Risk Analysis* 5(2):87, 1985.
2. A. Hollaender, "Acceptance of the Distinguished Contribution Award of the Society for Risk Analysis," *Risk Analysis* 6(2):113-115, 1986.
3. V. T. Covello and J. Mumpower, "Risk Analysis and Risk Management: A Historical Perspective," *Risk Analysis* 5(2):103-120, 1985.
4. S. Holden, "The Greening of the World Bank," *Science* 240:1610-1611, 1988.

NOTICE: Vlasta Molak's address is National Institute of Occupational Safety and Health (NIOSH), Mail Stop 31, 4676 Columbia Parkway, Cincinnati, Ohio 45226 (Phone 513-533-8334).

Toxics Conference Held in Thailand

A conference entitled "Risks of Toxic Substances in Developing Countries: Implications for Women and Children" will be held in Bangkok, Thailand, November 18-20, 1988. The conference, sponsored by the Centers for Disease Control, the National Science Foundation, and the World Health Organization, will examine risks of toxic substances associated with industrial and agricultural development having implications for the health of women and children, particularly reproductive and developmental health. Major topics will be risk management and policy development, methodological problems, environmental and reproductive health effects, and sociocultural factors. Travel arrangements for the conference have been established, with

round trip air fare from most American cities about \$900. For further information, contact Cheryl B. Travis, Department of Psychology, University of Tennessee, Knoxville, TN 37996-0900, Phone (615)974-6843.

SRA-Europe

(Continued from page 4.)

Coorganizers and Cosponsors

IIASA is a coorganizer of the conference, which is also cosponsored by the WHO Regional Office for Europe and by UNIDO. The contact for the conference is: IIASA Conference Center, A-2361, Laxenburg, Austria. Telephone: (02236) 715210.

—Based on report from Hans Bohnenblust.

Yugoslavia, Other Countries Interested in SRA

Vlasta Molak, International Coordinator of SRA, spent two weeks in June in her native Yugoslavia, where she delivered two lectures on the role of risk analysis in technological development and environmental protection and helped colleagues begin organizing an affiliated section in that country.

Her first lecture, at the Edvard Kardelj University in Ljubljana, was in the Department for Chemical Education and Information that is headed by Alexander Kornhauser. This group is involved in several international projects, including one with the U.S. Environmental Protection Agency. Her second lecture, arranged by Nikola Masic, a leading supporter of SRA, was at the Institute Ruder Boscovic in Zagreb, a city of over 1 million people. While in Zagreb, she also discussed the mission of SRA with the city's commissioner of health, physician Slobodan Lang, and looked into the possibility of setting up conferences and courses on risk analysis at Interuniversity in Dubrovnik.

Contacts with Other Countries

Responses to notices in the last two issues of this newsletter, together with results from the individual efforts of Molak and several other SRA members, have led Molak to believe that petitions will be forthcoming for section formation in Argentina, Israel, and the Philippines.

On a recent trip to Israel, Elmer Offenbacher of New York met with Eli Stern in Jerusalem to encourage the formation of an Israeli SRA section. And in August, Corazon Pe Benito Claudio, director of the Technology and Risk Assessment and Management Program at the University of the Philippines, informed Molak of her efforts in forming a Philippines SRA section. Seeking assistance in handling some of the country's pollution problems, Benito Claudio hopes to combine SRA activities with those of the Association of Southeast Asian Nations (ASEAN).

In addition, two visiting scientists from Poland have expressed a strong interest in forming a section upon their return to their own country, and Molak is in contact with scientists in China, Taiwan and India. With the favorable climate for technological development and environmental protection in India, interest in risk analysis is high, as was observed by a number of SRA members who attended the

Risk Management Meetings Held in France, Sweden

A seminar on "Applications, Perspectives and Limitations of Comparative Risk Assessment and Risk Management" was held in Nice, France, on Sept. 26-30. Organized by the Commission of the European Communities (CEC) and the Centre de Developpement des Etudes et Applications en Hygiene et Securite (CEDHYS, Paris), the seminar included papers on the aims of comparative risk assessment studies, the reliability of input data, comparative risk assessment (CRA) methods and their assumptions, case studies, the limits of validity in CRA, risk management strategies, risk perception and future perspectives.

A related symposium and workshop entitled "Management of Risk from Genotoxic Substances in the Environment" took place in Stockholm, Oct. 3-6. Organized by the Swedish National Institute of Radiation Protection, the Swedish National Chemicals Inspectorate, and the National Swedish Environmental Protection Board and cosponsored by five international organizations, the purpose of the symposium was to discuss, from the viewpoint of decision makers, the concept of a unified approach toward the handling of genotoxic agents on an international basis. Among the subjects addressed were risk analysis and biological conditions, as well as economic, social and legislative aspects of a unified risk approach.

Workshop on Risk Analysis in Developing Countries that was held in Hyderabad in 1985.

Thailand's Concern

Although SRA has made no official contacts with Thailand, Molak points out that that country's Princess Chulabhorn, who has a Ph.D. in organic chemistry, has chosen environmental science as the theme for the Second Princess Chulabhorn Science Congress in 1992. Thus, Thailand is obviously concerned about identifying the risks within its borders and could be helped by interactions with SRA members.

As noted in a separate article in this newsletter, Molak is soliciting the support of all SRA members in making contacts with other countries. She points out that environmental risks do not recognize political boundaries and that SRA efforts to reach other countries will be mutually beneficial to all participants.

Journal Contents

The table of contents of Vol. 8, No. 3 of the SRA journal *Risk Analysis* is reprinted below.

EDITORIAL

Edward J. Burger, Jr., *How Citizens Think About Risks to Health*

INCINERATION

Jerry Marcus and Ronald Mills, *Emission from Mass Burn Resource Recovery Facilities*

Jeffrey Stevens and Elizabeth Gerbec, *Dioxin in the Agricultural Food Chain*

Michael Gough, *Science Policy Choices and the Estimation of Cancer Risk Associated with Exposure to TCDD*

Richard Denison and Ellen Silbergeld, *Risks of Municipal Solid Waste Incineration: An Environmental Perspective*

Steven A. Broiles, *A Suggested Approach to Overcome California's Inability to Permit Urban Resource Recovery Facilities*

Carolyn Konheim, *Risk Communication in the Real World*

COMMENTS

Lillie Craig Trimble, *What Do Citizens Want in Siting of Waste Management Facilities?*

Kay H. Jones and James Walsh, *On the Regulation of Municipal Solid Waste Resource Recovery Incinerators*

ARTICLES

Suresh Moolgavkar, Anup Dewanji, and David Venzon, *A Stochastic Two-Stage Model for Cancer Risk Assessment I: The Hazard Function and the Probability of Tumor*

Bobby Scott, Fletcher Hahn, Roger McClellan, and Fritz Seiler, *Risk Estimators for Radiation-Induced Bone Marrow Syndrome Lethality in Humans*

Sang Ryeol Park, Tae Woon Kim, and Byung Ho Lee, *A Methodology for More Efficient Tail Area Sampling with Discrete Probability Distributions*

H. W. Lewis, *Concentrating on the Worst Performers*

Robert Rycroft, James Regens, and Thomas Dietz, *Incorporating Risk Assessment and Benefit-Cost Analysis in Environmental Management*

Dennis Epple and Lester Lave, *The Role of Insurance in Managing Natural Hazard Risks: Private versus Social Decisions*

Nancy Kraus and Paul Slovic, *Taxonomic Analysis of Perceived Risk: Modeling Individual and Group Perceptions Within Homogeneous Hazard Domains*

Timothy L. McDaniels, *Chernobyl's Effects on the Perceived Risks of Nuclear Power: A Small Sample Test*

SOFTWARE REVIEWS

Mark W. Averett, *Fault Tree Analysis (Program—CAFTA)*

Russell S. Kinerson, *Accidental Releases of Flammable or Toxic Chemicals (Program—BATEX)*

SOFTWARE LISTINGS

Paul Moskowitz

BOOK REVIEWS

Robin K. White

LETTER TO THE EDITOR

Peter Pruss, Donald Barnes, William Farland, Patricia Roberts, and Dorothy Patton, *Comment on "Dioxin: Are We Safer Now Than Before?" by Adam M. Finkel*

Manuscripts of articles for the journal should be submitted to: Curtis Travis, Editor, *Risk Analysis*, Bldg. 4500S, MS-6109, Oak Ridge National Laboratory, PO Box 2008, Oak Ridge, TN, 37831-6109.

Reviews of risk analysis software and software submitted for review should be mailed to: Paul D. Moskowitz, Biomedical and Environmental Assessment Division, Brookhaven National Laboratory, Upton, NY, 11973.

Kunreuther Named Program Director for NSF-DRSM

Howard Kunreuther, professor of decision science and public policy and management at the Wharton School, University of Pennsylvania, began a one-year term on September 1 as program director for the National Science Foundation's (NSF) Program on Decision, Risk, and Management Science (DRMS). He is replacing Arie Lewin, who has returned to Duke University. Kunreuther will be half-time with the NSF program and half-time with the Wharton School.

Robin Gregory is associate program director of the DRMS program. On leave from Decision Research, Eugene, Oregon, he began an 18-month term at NSF on February 16, soon after Vince Covello, Program Manager for Risk Assessment for NSF, went on leave to teach at the Center for Risk Communication at Columbia University.

The program for Decision, Risk, and Management Science supports research directed at increasing the understanding and effectiveness of problem solving, information processing, and decision making by individuals, groups, organizations, and society. The overall objective of DRMS is to build an interdisciplinary science base for decision making and management. Target dates for submitting proposals are January 15 and August 15. Any institution or group, private or public, may submit proposals.

Further information on the DRMS program can be obtained by calling Kunreuther or Gregory at 202-357-7417 or by writing to: NSF-DRMF, Room 336, 1800 G. St. NW, Washington, DC 20550.

Impact of Right-to-Know Act of 1986

Michael S. Baram

[Editor's Note: Michael S. Baram, an SRA member, is Adjunct Professor of Law and Director of the new Center for Law and Technology at Boston University Law School. He is also a partner in the Boston law firm of Bracken and Baram, which specializes in environmental, health and energy law. Over the past two years he has been writing a monthly column titled "Risk Analysis" for The National Underwriter, an insurance industry journal, and the following article is a Risk newsletter summary of three columns that appeared in March, April, and November of 1987 on risk communication requirements and other matters pertaining to industrial accidents.]

New Industrial Reporting Requirements

The flood of information on hazardous chemicals that must be reported by industry to state and local agencies and thereafter be made available to the general public under the Emergency Planning and Community Right-to-Know Act of 1986 has the potential for causing community anxieties, as well as stimulating nuisance and other tort actions against industrial firms. But the law also presents many opportunities for improving risk management and ultimately may bring about a reduction of accident hazards. It deserves the careful attention of company risk managers, their legal counsel and insurers.

Under the law, companies handling designated amounts of any of the 400 chemicals listed by the Environmental Protection Act as "extremely hazardous substances" must, for each chemical, annually file two reports with designated state and local commissions: (1) a list of Materials Safety Data Sheets (MSDSs) on the chemicals with indication of their availability for review, and (2) an inventory stating how and where the substances are stored, and what their quantities are. In addition, manufacturing facilities must file a third annual report with the Environmental Protection Agency on their routine releases to the environment of any of 300 chemicals included on another EPA list. All the reported information, other than trade secrets that are protected by means of a restrictive process requiring EPA approval, must be made available to the general public.

The law, which does *not* preempt state and local laws, also provides a framework for enforcement by EPA. In addition, it requires facilities to promptly notify state and local officials of accidental releases, and it specifies that state and local commissions for emergency planning and response action must be created. Not surprisingly, this complex law is causing corporations to reevaluate their activities, reduce the materials they use and store, and take improved

measures to prevent toxic chemical accidents and reduce routine releases, since reported information is available to the public and may stimulate anxieties and litigations.

Moving Beyond Compliance

Within months of the enactment of the Community Right-to-Know Act, some major firms using toxic chemicals were already moving *beyond* merely providing reports to comply with the law. These voluntary actions to reduce facility accident risks are at least partially prompted by the additional and diverse requirements of state agencies, the prospect of inspections by local officials, a new on-site inspection program for accident risks by the Occupational Safety and Health Administration, and the increased potential for litigation initiated by local agencies and citizens.

In developing programs to comply with the law and taking these voluntary initiatives to improve plant safety, industry is guided by EPA regulations and reports, such as the agency's Acute Hazardous Events Data Base (AHE/DB), a report that evaluates chemical accidents over the last five years and identifies the participants, chemicals, and injurious outcomes. It is also guided by new reports being issued by the American Chemical Society, the Chemical Manufacturer's Association, and other trade and professional groups. These firms recognize that the mandated availability of so much data to the general public could promote local opposition and litigation against them. It is clearly in industry's interest, then, to voluntarily act to improve the safety of its activities which involve toxic chemicals. Large firms producing these chemicals are also advising their "downstream" customers on safety measures and guiding local emergency committees and officials on emergency response strategies. Thus, technology transfer is being accomplished to an unprecedented degree.

Industry's Goals

Industry's first goal, of course, is to ensure that it complies with the required reporting and disclosure provisions to avoid substantial fines. Its second goal is to reduce any adverse economic effects or losses that might arise from the disclosure requirements. Steps toward achieving the second goal include voluntary efforts which will reduce the incidence and magnitude of accidents, source reduction, improving risk communication with the local community, and working with local officials on emergency response plans.

Some companies are moving from decentralized management to a more integrated system of control over chemicals—from purchasing to storage and use to waste management. Others are conducting their own risk assessments of facility safety, modeling gas cloud dispersions under various accident scenarios, reducing chemical quantities being stored, developing expert systems to guide and strengthen management response to chemical accidents, and establishing more effective communication and "partnerships" with local community officials and public groups.

These voluntary efforts show that the new disclosure law is already having a "forcing" effect which will bring about more enlightened management and a reduction of community accident risks, which is consistent with the economic goals and other interests of private enterprise.

Insurance Benefits Possible

Secondarily, insurance companies could reap significant benefits from the Right-to-Know Act. One result of the Act will be that insurance firms will have new data and risk management information which will improve their assessment of the firms utilizing toxic chemicals, and enable better decisions

about the pricing, terms and availability of insurance coverage for industry. Thus, the availability of the Acute Hazardous Events Data Base and other data presents the possibility that environmental insurers will have better statistical grounds on which to predict the risks of chemical accidents and set insurance rates.

The data base currently contains over 5400 records that represent some 10,700 separate toxic chemical events, over 90% of which occurred in the years 1982 through 1986. Of these, 72% of the events occurred in fixed industrial facilities and 28% occurred in transit.

Containing detailed information as to the causes and effects of the events from a variety of sources, including the National Response Center, the data base is structured to provide a consistent format, with comment sections used to maintain information that does not fit the coding scheme. The AHE/DB is augmented by two other data bases that provide information related to the facilities at which events have occurred and data on the functional and toxicological properties of the chemicals involved in the events. Used together, the data bases will facilitate the evaluation of the rate of injuries as a function of company size or type and the appraisal of the implications of various subcategories of chemical releases, all extremely useful to insurers.

The duties imposed on industry by the Right-to-Know Act are time consuming and costly, and communities are being forced to assess the level of danger posed by various chemicals and to develop emergency plans and other risk-reducing measures. But these burdens are manageable and could lead to better loss prevention and control in the chemical industry, better relations and communication with local officials and the public on activities which involve toxic chemicals, and the return of affordable pollution coverage.

Liaison Committee Adds New Contacts

With the recent addition of two new organizations, the SRA Liaison Committee now has established connections with 29 societies. The additions, along with the addresses and phone numbers of those serving as liaisons, are given below:

Board of Certified Safety Professionals. Robert DeHart, Union Carbide Corp., PO Box 8361, Bldg. 2000, Room 3330, South Charleston, WV 25303 (Phone 304-747-5325).

Earthquake Engineering Research Institute. Robin K. McGuire, Risk Engineering, Inc., 5255 Pine Ridge Rd., Golden, CO 80403 (Phone 303-278-9800).

The following is a correction of an incorrect address published in the last newsletter:

IEEE. Kazuhiko Kawamura, Professor, Electrical Engineering and Management of Technology, PO Box 1674, Station B, Vanderbilt University, Nashville, TN 37235 (Phone 615-322-3479).

(Continued on page 13.)

More News of Risk Centers

(Editor's Note: RISK newsletter continues its series of articles on risk centers, featuring in this issue centers at the New Jersey Department of Environmental Protection, Western Washington University, and the University of Delaware. The multi-institutional New Technologies Safety and Health Institute is also described.)

NJDEP's Office of Environmental Health Assessment

In 1986 the New Jersey Department of Environmental Protection (NJDEP) organized an Office of Environmental Health Assessment (OEHA) divided into three units, each dealing with a specific aspect of risk. The first, the Risk Assessment Unit, has the task of advancing risk assessment throughout state agencies; recently it has established new standards for drinking water quality and made assessments on chemicals for which no acceptable daily intake level exists. The second, the Risk Communication Unit, is charged with improving risk communications to the public; it has recently published a manual which covers such projects as improving the public meeting process and enlisting community cooperation in the process of risk assessment. The third, the Risk Reduction Unit, was formed to strengthen efforts to reduce risks at their industrial sources. This unit has recently participated in several projects, including one to develop methods for waste reduction audits and another to design a protocol for customized incentives for industry waste reduction.

Information on OEHA can be obtained from Henry Garie, Assistant Director, Division of Science and Research, New Jersey Department of Environmental Protection, CN 409, Trenton, NJ 08625. Phone: 609-984-6072.

Western Institute for Social and Organizational Research

Established last spring by the Department of Psychology at Western Washington University (Bellingham), the Western Institute for Social and Organizational Research (WISOR) conducts applied social psychological research and provides organizational and decision making consulting services to local, regional and state groups. It currently is participating in an international research program to determine the role of geography in the subjective perception of risks. It is also studying the role of information in the development of community hazard conflicts and the management of those conflicts. And in a third project, it is studying the

cognitive and emotional aspects of risk information processing, that is, how individuals construct and respond to mental representations of hazards, the goal being to make risk communication more effective.

For further information on WISOR, write to George Cvetkovich, Western Institute for Social and Organizational Research, Department of Psychology, Western Washington University, Bellingham, WA 98225. Phone: 206-676-3544.

New Technologies Safety and Health Institute

In August, 1986, the Hazard Assessment Group of CENTED at Clark University joined with the Occupational Health Program of the University of Massachusetts Medical School and the Division of Interdisciplinary Affairs at Worcester Polytechnic Institute to form the New Technologies Safety and Health Institute. The purpose of this institute is to identify and assess occupational and environmental hazards associated with new technologies and to minimize or prevent such hazards. It will provide information on technological hazards, conduct interdisciplinary research, develop educational and training programs, and sponsor an annual conference focusing on the multidisciplinary approaches to the challenge posed by new technologies. The institute is based in Worcester, Massachusetts, where it is ideally located near a large number of new technology industries and businesses and the communities involved with and affected by them.

For additional information on the institute, contact Mary H. Melville, The New Technologies Safety and Health Institute, 950 Main St., Worcester, MA 01610-1477. Phone: 617-793-7640.

The Disaster Research Center

The Disaster Research Center (DRC) was established at Ohio State University in 1963 and moved to the University of Delaware in 1985. Since its inception it has done nearly 500 field studies concerning group and organizational preparations for, responses to and recovery from disasters (earthquakes, hurricanes, floods, tornados and

hazardous chemical spills). It focuses on the social and organizational aspects of response to disasters—the delivery of emergency medical services, sociological behavior during mass emergencies, the legal aspects of governmental response to disasters, the operation of rumor control centers, and other related subjects. The goal of this research is to develop effective plans for countering future disasters. The center maintains its own library (over 18,000 items), which is open to all interested scholars, and has established close relations with disaster researchers in half a dozen foreign countries.

For further information on the center, write to: Disaster Research Center, University of Delaware, Newark, Delaware 19716. Phone: 302-451-6618.

SRA-ACT Premeeting Workshop Held Oct. 29-30

Prior to the SRA 1988 Annual Meeting, a premeeting workshop on "Inferring Carcinogenic Effects in One Species with Data from a Second Species" will be held at the International Hotel at the Baltimore-Washington Airport under the joint sponsorship of SRA and the American College of Toxicology. Organized by Daniel Byrd and James Wilson, the workshop will include an overview session that describes available data on interspecies differences in carcinogenic effects. In addition, it will include three sessions featuring the following speakers: Melvin Anderson, U.S. Air Force, in a session on pharmacokinetics; Roy Albert, University of Cincinnati, in a session on tissue sensitivity; and Curtis Travis, Oak Ridge National Laboratory, in a roundtable discussion on research needs. The workshop will also include a poster session.

Registration for the workshop is \$120, which includes lunches and a reception. For further information, call Alexandra Ventura (301-571-1840) or the hotel (1-800-638-5858).

Liaison Committee

(Continued from page 11.)

Persons wishing to serve as liaisons should contact Liaison Committee Chairman James D. Wilson, Monsanto Co., 800 North Lindbergh, St. Louis, MO 63167 (Phone 314-694-8879).

Elections Announced

(Continued from page 2.)

Joellen Lewtas holds a Ph.D. in biochemistry from North Carolina State University (1973). Since 1980 she has been chief of the Genetic Bioassay Branch at the Environmental Protection Agency's Health Effects Research Laboratory, Research Triangle Park, N.C. Her specialty is multidisciplinary research in the assessment of the health effects of complex environmental mixtures.

David William Gaylor received his Ph.D. in statistics from North Carolina State University (1960). He is the director of the biometry staff at the National Center for Toxicological Research in Jefferson, Arkansas. Previously he served as the chief of the biometry branch of the National Institute of Environmental Health Sciences.

Catherine St. Hilaire holds a Ph.D. in microbiology from the M.S. Hershey Medical School of the Pennsylvania State University. She has served as director of the ILSI Risk Science Institute and at present is a principal at ENVIRON Corporation, Washington, D.C., a consulting firm specializing in risk assessment for adverse health effects of environmental chemicals.

Branden B. Johnson received a Ph.D. in geography from Clark University in 1980 and also holds degrees in environmental values and environmental affairs. Since 1987 he has been a research scientist in the Risk Communication Unit of the New Jersey Department of Environmental Protection. He is also associate professor of science, technology and society at Michigan Technological University.

James D. Wilson received a Ph.D. in organic chemistry from the University of Washington in 1966. He is the regulatory management director for special projects on the Corporate Environmental Policy Staff of the Monsanto Company in St. Louis, Missouri. During the past two years he has served as the chairman of SRA's Liaison Committee.

Remaining Council Members

The following council members will remain in office through the indicated years: D. Warner North (1989), Ola Svenson (1989), Robert G. Tardiff (1989), George Apostolakis (1990), W. Gary Flamm (1990), and Richard Wilson (1990).

Council members retiring after three years of service are B. John Garrick, Peter Barton Hutt, and R. Talbot Page.

Chapter News

As this newsletter goes to press, no new U.S. chapters have received formal recognition from the SRA Council during the 1987-88 year; however, two or three chapters may be accepted into the society at the D.C. meeting. Steven D. Lutkenhoff, with the Cincinnati office of the Environmental Protection Agency, and George Cvetkovich, with Washington State University in Bellingham, Washington, have each reported submitting petitions for their regions, and a group in Pittsburgh is also showing interest in chapter formation. In each of these cases, a prerequisite to recognition will be a clear delineation of the geographical boundaries of the chapters.

National Capital Area Chapter

Recent activities of the NCA Chapter have all been focused on hosting the 1988 SRA Annual Meeting (see page 1).

East Tennessee Chapter

SRA's East Tennessee Chapter held its traditional wine and cheese social on September 21 and heard guest speaker Dean Eyman, head of HAZWRAT in Oak Ridge, talk on "An Overview of Hazardous Waste Cleanup Projects Directed by HAZWRAT." The annual membership drive meeting will be held the first week in December, with year-end elections following.

New England Chapter

At its July 12 meeting, the New England Chapter heard R. Steven Konkel of the Massachusetts Institute of Technology speak on "Managing Risky Decisions When Experts Disagree." He discussed three cases: dioxin emissions from an incinerator; the siting of a liquified natural gas terminal; and the spraying of carbaryl for the gypsy moth.

Northern California Chapter

According to the NCCSRA newsletter, issued by chapter secretary Jeffrey Daniels, the Northern California Chapter is well into plans for hosting the 1989 SRA Annual Meeting in San Francisco next fall. Chris Whipple and Ray Boykin are co-directors of the Planning Committee and are being assisted by Joe Fiksel (finance), Jeff Daniels (arrangements), and B. John Garrick of the Southern California Chapter (program).

The newsletter also reported that the chapter expects to have over 100 members by the end of the year (they had 96 in May), which would represent a 30% increase over 1987. The chapter welcomed SRA President Vincent T. Covello to the San Francisco Bay Area on April 28.

Lone Star Chapter

On September 29 the Lone Star Chapter, which meets regularly at the University of Texas School of Public Health, heard Dennis Perrotta, director of the Epidemiology Division of the Texas Department of Health, speak on "Health Risk Assessment in Texas State Government." He pointed out that in Texas seven state agencies plus several federal and local agencies have responsibilities for managing environmental risks; however, because of the passage of the Health Risk Assessment Act of 1987, the Texas Department of Health, through the auspices of the Toxic Substances Coordinating Committee, has the responsibility for coordinating the work of the agencies. Future issues to be addressed by the agencies are appropriate staffing, interaction with federal agencies, risk communication, and improved interaction with both industry and academia.

The chapter is meeting October 27 to hear D. Warner North of the Northern California Chapter speak on Proposition 65.

Southern California Chapter

The Southern California Chapter began its second year with the installation of officers on June 1. Stan Kaplan of Pickard, Lowe, and Garrick, Inc. assumed the helm from outgoing President George Apostolakis, who will remain on the chapter's council. Joining them were the new president-elect, Michael Stamatelatos of GA Technologies, and three new councilors: Larry Froebe, International Technology Corporation (to serve 1 year); G. William Hannamam, NUS Corporation (2 years); and Robert Mulvihill, Planning Research Corporation (3 years). Andrew Dykes and Brian Fagan, both of Pickard, Lowe, and Garrick, are continuing second-year terms as treasurer and secretary, respectively.

Recent meetings of the chapter have focused on risk communication. At the June 1 meeting, which was held in Garden Grove, Tom Maugh, a chemist

who is science editor of the *Los Angeles Times* and was on the staff of *Science Magazine* for 13 years, discussed how engineers can improve communications with journalists. At a September 22 meeting in Torrance, the chapter heard Lynn Bermann, an industrial hygienist for the Southern California Gas Company, speak on the Chemical Education for Public Understanding Project (CEPUP) developed by the University of California, Berkeley, to provide a means for effectively communicating risk issues to the public.

The chapter is planning a second annual workshop on May 12, 1989, at the Arnold and Mabel Beckman Center of the National Academies of Science and Engineering at UC, Irvine. The tentative topic is "The Art and Science of PRA, Realizing Its Full Potential."

Research Triangle Chapter

The Research Triangle Chapter is beginning a new year November 1 with Carol M. Schiller of Anderson, Schiller & Rutherford assuming the presidency from outgoing President Kenneth Brown. Other new officers are: president-elect, Thomas Starr, Chemical Industry Institute of Toxicology (CIIT); secretary, Deborah Amaral, University of North Carolina; and reelected councilor, Harvey Richmond, Environmental Protection Agency. Officers continuing are Dave McKee, serving his second year as treasurer, and Ila Cote, serving her third year as councilor.

Brown reports that the chapter progressed considerably during the past year. Chapter membership increased from 53 to 71, thanks to the efforts of Amaral, who served as chairman of the Membership/Publicity Committee; and communications were improved with a chapter newsletter prepared by Richmond with the assistance of Donna Sivulka and Paul Mushak. The chapter was also fortunate that Joe Rieth was willing to assume the office of secretary when the elected secretary, Randy Crawford, moved elsewhere, and that Jenifer Heath accepted that task when Rieth also moved. Thanks are also due to outgoing Councilor Jo Mauskopf, who helped manage chapter meetings.

On September 19 over 90 people attended the chapter's workshop on municipal waste disposal titled "Burn vs. Bury: A Question of Risk?" On June 7 the chapter heard Kenneth L. Hastings, a former science advisor to the Peace Corps, speak on "Mycotoxins of Importance in the Southeastern United States." And an October 11 meeting, held

jointly with the Air Pollution Control Association, featured two speakers: Michael Berry, director of the EPA's Environmental Criteria and Assessment Office, Research Triangle Park, who spoke on "Overview of Indoor Air Pollutant Risks," and William Desvousges, Research Triangle Institute, who spoke on "Communicating Radon Risk Effectively."

Philadelphia Chapter

The Philadelphia Chapter is planning an afternoon symposium (date to be announced) on SARA Title III, the Superfund Reauthorization Right-to-Know provision. Representatives from industry, regulatory agencies and citizen groups will be invited to present their views.

38 Attend Risk Courses

The SRA short courses on risk assessment and risk management of large engineered systems given in Arlington, Virginia on August 9-12 were attended by 38 persons. Two courses were offered—one on space and defense systems and the other on nuclear power plants. These courses, which use quantitative models developed by Pickard, Lowe and Garrick, Inc., will be offered again in October 1989 in New Orleans, along with similar courses on other large systems.

Starr Receives Rockwell Medal, HOFEST Award

Chauncey Starr, a previous recipient of SRA's Distinguished Contribution Award, has been awarded the Rockwell Medal by the International Technology Institute and has been admitted to the world level of the Hall of Fame for Engineering, Science and Technology (HOFEST). HOFEST recognizes individuals for their contributions in the fields of engineering, engineering science, and technology.

Starr, an electrical engineer with a Ph.D. in physics, was the founding president of the Electric Power Research Institute. During his career he has worked on the Manhattan District Project and in industry and has served as the Dean of the UCLA School of Engineering and Applied Science.



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Katie Ingersoll, *Production Assistant*

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Vincent T. Covello, *President*, 1987-88
Richard C. Schwing, *President-Elect*, 1987-88
Frances M. Lynn, *Secretary*, 1987-89
Joseph Fiksel, *Treasurer*, 1987-89
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B. John Garrick, 1988
Peter Barton Hutt, 1988
R. Talbot Page, 1988
D. Warner North, 1989
Robert G. Tardiff, 1989
Ola Svenson, 1989
George Apostolakis, 1990
W. Gary Flamm, 1990
Richard Wilson, 1990

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Lorraine S. Abbott
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Knoxville, TN 37912
(Phones: 615-482-4640; 615-689-5315 [Res.])

Positions Available

The U.S. Environmental Protection Agency's Risk Communication Program (RCP) is looking for qualified people to join its staff for one to three years as part of the Intergovernmental Personnel Act (IPA) program. The RCP's activities are designed to help people put risks in context, understand tradeoffs between risks and costs, become informed participants in individual and community risk reduction decisions, and understand residual risks that remain after action.

The RCP has four components: *research* oriented toward understanding how people form their risk perceptions and how alternative forms of communication change these perceptions; *consulting and analysis* to assist program offices involved in risk communication activities, especially in evaluating their effectiveness; *training* to help agency staff incorporate the results from research and analysis in their ongoing risk communication activities; and *outreach* for regional and program offices.

Under the IPA program, an employee of a state or local government, a college or university, or other nonprofit organization can be temporarily assigned to (in this case) the RCP. Qualified people could come from several disciplines, such as psychology, communications, marketing, decision sciences, and economics. For further information, contact Ann Fisher, Manager, Risk Communication Program, PM-221, U.S. Environmental Protection Agency, Washington, D.C., 20460, Phone 202/382-5500.

1989 Meetings

—Feb. 27–Mar. 3. ANNUAL MEETING OF THE SOCIETY OF TOXICOLOGY, Atlanta Hilton and Towers, Atlanta, Georgia. Contact: Society of Toxicology, 1133 Fifteenth St., NW., Suite 1000, Washington, D.C. 20005. Phone 202/293-5935.

—Mar. 6-9. 1989 JOINT SYMPOSIUM ON STATIONARY COMBUSTION NO_x CONTROL, Hyatt on Union Square, San Francisco, CA. Sponsored by U.S. EPA and EPRI. Contact: Claudia Runge, EPRI, 3412 Hillview Ave., Palo Alto, CA 94303. Phone 415/855-2149.

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