

RISK *newsletter*

Published by the SOCIETY for RISK ANALYSIS

Volume 10, Number 1

January, 1990

Risk Analysis Gains Recognition

Evidence of the public's recognition, if not always its acceptance, of risk analysis as a basis for societal decisions is cropping up in unexpected places. Within a three-month span, for example, *The Christian Century* addressed the subject of risk analysis twice. In its September 27, 1989, issue, William H. Willimon, referring to an article by Richard Wilson and E. A. C. Crouch, wrote that "*Science* [April 1987] reports that there is a whole new field of science called risk-assessment analysis." He noted, in part facetiously, that people now can figure out how to die well. A subsequent editorial by James M. Wall (December 6, 1989), titled "When Risk Analysis Confronts Faith," seriously argues both for faith in the expertise of risk analysts and for an acceptance that life can never be risk free.

Risk analysts no doubt welcome Wall's support, at the same time realizing that faith in their conclusions may not be enough to initiate actions against a risk. The lack of acceptance may be attributed to any number of reasons, but sometimes it is simply because the public is forced to choose between opposing risks. In his luncheon talk on "Lessons from the War Zone" at SRA's 1989 Annual Meeting, Stanford University's President Donald Kennedy described just such a situation. He was "run over by a train," he said, when in 1978, as Commissioner of the Food and Drug Administration, he announced that the 1938 Safety Provision of the

(Continued on page 2.)

Ruckelshaus Gives "Wish List"

William D. Ruckelshaus, recipient of SRA's 1989 Distinguished Service Award, presented a "wish list" during his address to the Society's Plenary Session of the 1989 Annual Meeting in San Francisco. Admitting that he thought primarily in terms of the Environmental Protection Agency, which he had headed twice, he said he would like to see the country do the following:

—Stop bashing the EPA. ("It is the one institution in the country that has a chance of accomplishing any of the goals of the environmental movement.")

—Stop giving EPA assignments it cannot carry out. ("I don't really believe that the public can't take something less than zero risk.")

—Change the political rhetoric that obscures so much of our public debate. ("Before promising an end to [all risks], I would force every politician to [tell] how much it will cost, and who's going to pay for it.")

—Stop calling each other names. ("Everyone who disagrees with you is not either in the pocket of industry or a tree hugger.")

—Have balanced reporting from the media. ("Balanced reporting is not trying to find extremes of opinion to see if you can set up a Geraldo Rivera kind of brawl.")

—Develop a public involvement process that has an endpoint at which a decision is ultimately made. ("The irony is that the longer it takes to get new facilities sited, the more obsolete and less environmentally sound are the facilities being used.")

—Let EPA's first responsibility be to educate the public, and through the public, to educate Congress. ("EPA's first mission was advocacy, [but now] it is to educate, educate, educate.....We need neutral sets of data.....A wise public policy would give us the ability to choose where to direct

(Continued on page 2.)

Risk Recognition

(Continued from page 1.)

Food, Drug, and Cosmetic Act required him to remove saccharin, a known carcinogen, from the marketplace. Because of the public outcry, saccharin remained on the market under the subsequently passed Saccharin Warning and Labeling Act.

Another debate in which the public is actively participating centers on the removal of asbestos from public buildings, a debate in which two SRA members have recently been quoted: Michael Gough (Center for Risk Management) in *The American Spectator*, October 1989; and Morton Corn (John Hopkins University) in *The Wall Street Journal*, January 19, 1990. The controversy centers both on health (the risk to the workers removing the asbestos versus the risk to the building occupants) and costs, which are estimated to exceed \$100 billion over the next 25 years.

The asbestos problem, addressed by Congress through its 1986 Asbestos Hazard Emergency Response Act, is a good example of the well-known conflicts faced by risk managers,

particularly, in this case, by school board members. Dick Schwing, SRA's 1988-89 president, discussed dilemmas of this type in an address to the American Society of Civil Engineers (March, 1988), saying: "Finite resources require that even life-extending and life-saving efforts must be approached with efficiency criteria in mind. Efficiency becomes synonymous with priority setting and tradeoffs. Efficiency also can be shown to be the ethical criterion for choice." It is doubtful that the person or group left in a life-threatening situation could perceive the ethics of efficiency; nevertheless, constraints on time and resources are realities that cannot be denied.

Paul Deisler, SRA's 1986-87 president, has a more basic concern: the ethics and associated politics of communicating a risk to the public. In organizing a March 28, 1990, conference on risk communication at the University of Houston (see story in this newsletter), he asks: When does informing public opinion become forming public opinion, and when does either become manipulation?

The Society for Risk Analysis was organized to help the public, business,

and government assess and manage societal risks. As risk analysis gains recognition, the challenge for SRA is to fulfill its mission. The task will not be accomplished by merely calling attention to risks, but rather by leading the public and its elected representatives to informed decisions. (LSA)

Ruckelshaus "Wish List"

(Continued from page 1.)

[our] dollars to get the maximum return for that investment.")

In concluding, Ruckelshaus challenged the audience: "It's important that you continue to think about risks and recognize that in a democracy it is essential that we adjust to the public voice...What is at stake is whether free societies work. Can we deal with these chronic problems...in the context of freedom? I think as we move into the next century, for many of the risks that we face, particularly global risks, that is an open question and one which needs your wisdom and collective work and thought to answer more rationally and in the interest, not just of the United States, but, indeed, of the world."

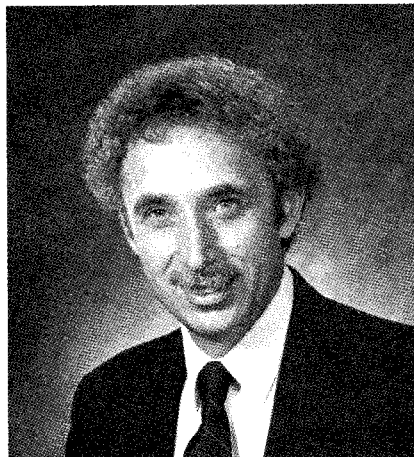
1989-90 Officers Announced

New SRA officers elected to serve with President B. John Garrick during the 1989-90 year were announced on the evening of October 30 at the Society's 1989 business meeting held in San Francisco. The officers include the president-elect, secretary, treasurer, and three new councilors. The treasurer and secretary will each serve two-year terms, and the councilors will serve three-year terms.

Travis Is President-Elect

Curtis C. Travis, who has served as editor-in-chief of the Society's journal *Risk Analysis* since 1983, is the new president-elect. In that position, he automatically assumes the chair of the Annual Meetings Committee.

Travis has been active in the SRA on both the local and national levels



Curtis C. Travis
President-Elect

throughout the Society's history. In 1984, he was awarded the SRA Distinguished Service Award, and in 1988 he served

as president of the East Tennessee Chapter.

Since 1984, Travis has been director of the Office of Risk Analysis in the Health and Safety Research Division at Oak Ridge National Laboratory, Oak Ridge, Tennessee. He is chairman of the Office of Science and Technology Policy Task Force on Risk Analysis in Federal Agencies and is a member of five National Academy of Sciences Committees. He also serves on several editorial, advisory, and review boards, panels, and committees.

Travis has written extensively on risk analyses of various technologies, nuclear exposure risks, applied mathematics, and theoretical ecology. He authored the Guidance Document for Health Assessments at Superfund

Sites for the Agency for Toxic Substances and Disease Registry. He has authored or co-authored seven books, the latest (with H. A. Hattemer-Frey) titled *Municipal Waste Incineration and Human Health* (in preparation).

Since 1988 Travis has organized several conferences on risk analysis in the United States, Greece, Cuba, Mexico, Thailand and India. He also directs the SRA's annual courses on "Carcinogenic Risk Assessment," the next one to be held in April, 1989.

Travis obtained his training at the University of California, Davis, receiving his Ph.D. in Applied Mathematics in 1971. He served as Research Engineer at the Jet Propulsion Laboratory of the California Institute of Technology 1966-68, and taught engineering and applied mathematics at Vanderbilt University, 1971-74, and the University of Tennessee, 1974-76. He has been at Oak Ridge National Laboratory since 1976.

Molak Is Secretary

Vlasta Molak, with the National Institute of Occupational Safety and Health (NIOSH) in Cincinnati, Ohio, is the 1989-91 secretary of SRA. She has been the international coordinator of the Society since 1987 and at the last SRA annual meeting convened an International Communication Network (see page 8).

Molak is the founder and president of Biotechnology Forum, Inc. in Cincinnati and chairs the Subcommittee for Technical and Chemical Information Interpretation of the Local Emergency Planning Committee for Hamilton County, Ohio. She is also the liaison between the American Society for Microbiology and the Society for Environmental Toxicology and Chemistry.

Prior to joining NIOSH, Molak worked in regulatory toxicology and the development of risk assessment methodology at the U.S. Environmental Protection Agency. At EPA she was twice awarded a certificate of achievement for mentorship in the Minority Research Apprenticeship

Program; she also received a special achievement award in biotechnology.

Molak has a B.S. in physical engineering, an M.S. in chemistry, a Ph.D. in biochemistry, and post-doctoral training in molecular genetics.

Boykin Is Treasurer

Raymond F. Boykin, an associate professor of management science at California State University, Chico, and director of the university's Center for Risk Management, is the Society's new treasurer. A charter member, he was program chairman of the 1984 SRA Annual Meeting and general co-chair of the 1989 Meeting.

Before going to California State, Boykin worked as a specialist in risk assessment at Monsanto Company. Earlier he had been a senior research scientist in environmental studies at Rockwell International. At California State he has been named outstanding faculty member (1988), cited for meritorious performance (1987, 1988), and given a professional achievement award (1988).

Boykin received his Ph.D. in management science from St. Louis University in 1986. Earlier degrees include an M.S. from San Diego State University (1976) and a B.A. in quantitative methods from California State University, Fullerton (1975).

Three New Councilors

Newly elected SRA councilors are R. A. (Tony) Cox, Peter Barton Hutt, and Roger E. Kasperson.

Tony Cox, a member of SRA-Europe's Executive Committee, recently organized his own company, Four Elements, a risk analysis and safety engineering consultancy that is based in London and specializes in the safety of chemical manufacturing and offshore oil and gas industries, human factors, and the dynamics of accidental impacts and blast loadings. The company is an associate company of the Environmental Resources Management Group of Exton, Pennsylvania and of Environmental Resources Ltd of London. Before forming Four Elements, Cox was chief

Thank You

The Society for Risk Analysis expresses appreciation to the following outgoing officers and councilors:

From the Executive Committee

Vincent T. Covello
1987-88 *President*

Francis M. Lynn
Secretary

Joseph Fiksel
Treasurer

From the Council

D. Warner North
Robert G. Tardiff
Ola Svenson

executive of Technica Ltd. He has a Ph.D. in air pollution from London University and an M.A. in mechanical engineering from Cambridge University.

Peter Barton Hutt returns to the Council, having also been a councilor from 1985 to 1988. A lawyer with Covington & Burling in Washington, D.C., he served from 1971 to 1975 as chief counsel for the Food and Drug Administration, where he received the FDA Award of Merit. He drafted the first federal regulatory requirement incorporating quantitative risk assessment in regulating carcinogens in the food supply and co-authored (with Richard A. Merrill) a book titled *Food and Drug Law: Cases and Materials* (Foundation Press, 1980). He is a member of the National Academy of Sciences Committee on Risk Perception and Communication and serves on a number of other federal committees and boards concerned with the health effects of drugs and additives. He also serves on the boards of directors for the Georgetown University Institute for Health Policy Analysis, the University of Virginia Center for Advanced Studies, the American Pharmaceutical Institute, and the Foundation for Biomedical Research. Hutt has an A.B. from Yale University (1956), an LL.B. from Harvard University (1959), and an

(Continued on page 4.)

New Officers

(Continued from page 3.)

LL.M. from New York University (1960).

Roger Kasperson was elected to the Council after having served as the general chairman of SRA's 1986 Annual Meeting and as the coordinator for the social sciences sessions at the 1989 Meeting. Based at the Center for Technology, Environment, and Development (CENTED) at Clark University, Worcester, MA, Kasperson

specializes in social issues in risk analysis and management, policy analysis, and global environmental hazards. Since 1985, he has been the co-chairman of the International Research Group on Risk Communication and is also the current chairman of the International Geographical Union's Study Group on Critical Environmental Zones. He is the author of a forthcoming book titled *Communicating Risks to the Public: International Perspectives* (Reidel). An earlier book, *Water Reuse*

and the Cities, was named by American Scholar as one of the significant science books of 1977, and in 1986 he received a Distinguished Achievement Award in the Learned Articles category from the Educational Press Association of America for an article on the Bhopal, India tragedy. He has also participated in National Research Council studies on nuclear waste repositories. Kasperson has a B.A. from Clark University (1959) and an M.A. and a Ph.D. from the University of Chicago (1962, 1966).

Addresses: 1989-90 Officers and Councilors

The names and addresses of the officers of the Society for Risk Analysis and the members of the Council for the year 1989-90 are as follows:

President: B. John Garrick, Pickard, Lowe and Garrick, Inc., 2260 University Drive, Newport Beach, California 92660 (Phone: 714-650-8000; FAX: 714-646-9023).

President-Elect: Curtis C. Travis, Office of Risk Analysis, Health & Safety Research Division, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, Tennessee 37831-6109 (Phone: 615-576-2107; FAX: 615-574-9887; FTS 626-2107).

Secretary: Vlasta Molak, Bio-Technology Forum, Inc., 8987 Cotillion Drive, Cincinnati, Ohio 45231 (Phone: 513-533-8334; FAX: 513-533-8371).

Treasurer: Raymond F. Boykin, California State University, Chico, College of Business, Chico, California 95929-0011 (Phone: 916-895-5895; 916-895-6824).

Immediate Past President: Richard C. Schwing, Operating Sciences Department, General Motors Research Laboratories, 30500 Mound Road, Warren, Michigan 48090-9055 (Phone: 313-986-1348; FAX: 313-986-0574).

Executive Secretary: Richard J. Burk, Jr., 8000 Westpark Drive, Suite 400, McLean, Virginia 22102 (Phone: 703-790-1745; FAX: 703-790-9063).

Councilor, 1990: George Apostolakis, 5532 Boelter Hall, University of California, Los Angeles, California 90024-1597 (Phone: 213-825-1300; FAX: 213-825-0761).

Councilor, 1990: W. Gary Flamm, 11760 Indian Ridge Road, Reston, Virginia 22091 (Phone: 202-223-0157; FAX: 202-835-8970).

Councilor, 1990: Richard Wilson, Energy and Environmental Policy Center, Jefferson Physical Laboratory, Harvard University, Cambridge, Massachusetts 02138 (Phone: 617-495-3387; FAX: 617-495-0416).

Councilor, 1991: Joellen Lewtas, Health Effects Research Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711 (Phone: 919-541-3849; FAX: 919-541-0694).

Councilor, 1991: Catherine St. Hilaire, Environ Corporation, 6475 Christie Avenue, Suite 408, Emoryville, California 94608 (Phone: 415-655-7400; FAX: 415-655-9517).

Councilor, 1991: James D. Wilson, American Health Council, 1330 Connecticut Avenue, NW, Suite 300, Washington, DC 20036 (Phone: 202-659-0060; FAX: 202-659-1699).

Councilor, 1992: R.A. (Tony) Cox, Four Elements Ltd., 25 Victoria Street, London SW1H 0EX, England (Phone: 01-233 1088; FAX: 01-233 2152).

Councilor, 1992: Peter Barton Hutt, Covington & Burling, 1201 Pennsylvania Avenue, NW, Washington, DC 20004 (Phone: 202-662-5522).

Councilor, 1992: Roger E. Kasperson, Center for Technology, Environment, and Development, Clark University, 950 Main Street, Worcester, Massachusetts 01610 (Phone: 508-751-4605).

SRA-Europe

Chairman, Executive Committee: P. J. Stallen, Institute for Environment and Systems Analysis, Emmastraat 16, 1075 HT Amsterdam, Holland (Phone: 020-662-0696; FAX: 020-751-576).

Secretary: Hans Bohnenblust, Ernst Basler & Partners, CH-8702 Zollikon-Zurich, Switzerland (Phone: 01-395-11-11; FAX: 01-395-12-34).

SRA-Japan

President: Tomitaro Sueishi, Department of Environmental Engineering, Osaka University, Yamadakami, Suita, Osaka, Japan.

Secretary: Saburo Ikeda, Institute of Socio-Economic Planning, University of Tsukuba, Sakura, Ibaraki 305, Japan (Phone: 0298-53-5182 or -5170; FAX: 0298-53-5070 or -3849).

1989-90 Committee Chairs

President B. John Garrick has announced the following committee chairs for the year 1989-1990:

Annual Meeting: Curtis C. Travis, Office of Risk Analysis (see address on page 4).

Awards: Paul Deisler, 11215 Wilding Lane, Houston, Texas 77024 (Phone: 713-465-7958).

Chapter Liaison & Relations: Catherine St. Hilaire (see address on page 4).

Conferences & Workshops: Yacov Y. Haimes, Department of Systems Engineering, University of Virginia, Thornton Hall, Charlottesville, Virginia 22901 (Phone: 804-924-0960).

Definitions: Lawrence B. Gratt, 5463 Coral Reef Avenue, La Jolla, California 92037 (Phone: 619-581-0092).

Executive: B. John Garrick (see address on page 4).

Finance: Joseph Fiksel, Teknowledge Inc., P.O. Box 10119, Palo Alto, California 94303 (Phone: 415-424-0500).

Gifts and Grants: Steven Swanson, ICF-Clement, 9300 Lee Highway, Fairfax, Virginia 22031-1207 (Phone: 703-934-3110).

Global Risk Analysis: Rob Coppock, National Research Council, JH-853, 2100 Constitution Avenue NW, Washington, DC 20418 (202-334-3037).

Membership: W. Gary Flamm (see address on page 4).

Nominations: Vincent T. Covello, Center for Risk Communication, Columbia University, Room B-1, 60 Haven Avenue, New York, New York 10032 (Phone: 212-305-3464).

Professional Development: Joellen Lewtas (see address on page 4).

Publications: Richard C. Schwing (see address on page 4).

Publicity: Michael C. Cullingford, IAEA, P.O. Box 200 A-1400, Vienna, Austria.

Research and Fellowship Programs: Vincent T. Covello (see address above).

Sections and Chapters: Chris G. Whipple, Electric Power Research Institute, 3412 Hillview Avenue, Palo Alto, California 94303 (Phone: 415-855-2443).

Society Liaison: James D. Wilson (see address on page 4).

Subcommittee on International Affiliations: Vlasta Molak (see address on page 4).

Subcommittee on Proceedings Criteria: Richard C. Schwing (see address on page 4).

1989-90 Contact Councilors

For the fourth consecutive year, SRA will utilize the concept of contact councilors in which a council member serves as a specific contact on the SRA Council for one or more committee chairs and acts as a representative/advocate for the committees at Council meetings. The contact councilors for the 1989-90 year are listed below, along with the corresponding committee chairs (in parentheses):

B. John Garrick: Definition (Gratt); Executive (Garrick); Nominations (Covello).

Curtis C. Travis: Annual Meeting (Travis).

Vlasta Molak: Subcommittee on International Affiliations (Molak).

Raymond F. Boykin: Finance (Fiksel); Gifts and Grants (Swanson).

Richard C. Schwing: Conferences and Workshops (Haimes); Publications (Schwing); Subcommittee on Proceedings Criteria (Schwing).

George Apostolakis: Awards (Deisler); Research and Fellowship Programs (Covello).

W. Gary Flamm: Membership (Flamm); Sections and Chapters (Whipple).

Joellen Lewtas: Professional Development (Lewtas).

Catherine St. Hilaire: Chapter Liaison and Relations (St. Hilaire); Publicity (Cullingford).

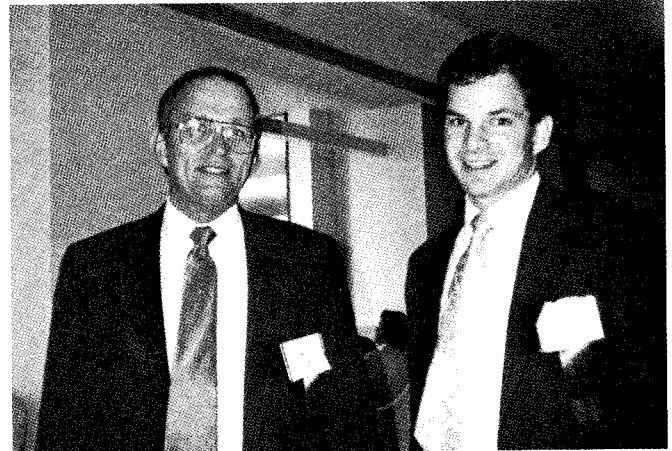
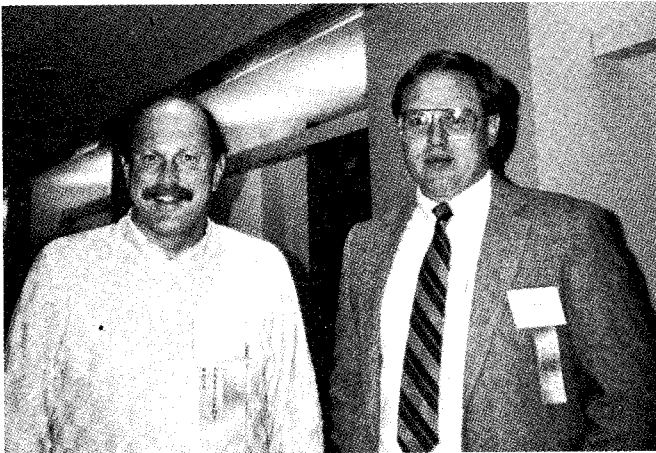
James D. Wilson: Society Liaison (J. Wilson).

Roger E. Kasperson: Global Risk Analysis (Coppock).

NOTICE

The SRA Council will meet in Washington, D.C., on March 16. Committee chairs and other SRA members having topics they wish to be discussed by Council should reach their contact councilors or write to the Secretariat at the address shown on the back page of this newsletter.

Report from San Francisco



1989 Meeting Organizers: General Co-chairmen Chris Whipple and Ray Boykin (in picture at left) and Technical Program Chairman Bill Gekler and Assistant Chairman Brian Fagan (at right).

The October 17 earthquake in San Francisco apparently did not deter most members from attending the Society's 1989 Annual Meeting October 29 — November 1. However, the Nikko Hotel staff and tourist guides reported a decided overall decline in the number of visitors to the city, and at least one SRA member cancelled because "giving a 10-minute paper wasn't worth the risk."

Plenary Session

Chris Whipple, general co-chair of the meeting, called the Monday morning Plenary Session to order, and Dick Schwing, outgoing SRA president, followed with a welcome to the attendees. Betty Anderson, a past president, then presented the Society's 1989 Distinguished Service Award to the session's speaker, William D. Ruckelshaus.

In making the presentation, Anderson remarked that Ruckelshaus was the first lawyer and first United States public official to receive the award. Ruckelshaus, chairman and chief executive officer of Browning-Ferris, Inc., responded that he probably was also the first chief executive officer of a garbage company to receive the award. Before launching into his "wish list" (see page 1), Ruckelshaus commented on how ironic it was that SRA was

having its meeting in a city which less than two weeks earlier had experienced an earthquake. "I suppose that shows how little we all know about risk," he concluded.

Business Meeting

John Garrick, the incoming SRA president and the 1988-89 chairman of the Annual Meetings Committee, opened the Monday evening business meeting by announcing that all statistics for the annual conference were favorable: 450 persons had registered, and 235 papers were being presented in 70 different sessions.

Outgoing President Dick Schwing then called for reports from officers and committees. The outgoing secretary, Francis Lynn, announced the results of the SRA election (see story on page 2) and thanked outgoing officers and councilors. She reported that as of September, the Society had 1,538 members as opposed to 1,504 the previous year. Lynn also asked the attendees to participate in a second annual meeting survey. (Results of the first survey were given in the September 1989 issue of this newsletter.)

Gary Flamm, chairman of the Membership Committee, said the Council feels that SRA needs a membership of 3000 and had decided

to begin a three-pronged campaign to reach that goal. First, a brochure describing the Society would be issued; second, a contest would be held in which the member recruiting the most new members would win \$500; and third, another contest would be conducted in which the chapter providing the largest number of new members would be awarded \$1000.

Curtis Travis, editor of the Society's journal *Risk Analysis* and the new president-elect, reported that submissions to the journal had increased by 30% during the year, and the quality of the papers had improved substantially. The acceptance rate for the papers is about 40%, with about 60 papers being published per year. Plenum Publishers requires six months lead time, and the average time to obtain paper reviews is three to six months.

Joseph Fiksel, outgoing treasurer, said the Society was in good financial health. Revenues for the year were expected to be about \$216,000 and expenses were projected at \$205,000. Dues will remain at \$50. While these figures are encouraging, Fiksel and incoming treasurer Ray Boykin pointed out that about one-fourth of the Society's income is given by sustaining members (see corporate sponsor list elsewhere in this newsletter), some of whom have

stated that budget constraints would preclude future gifts. The Society has about \$75,000 invested.

Lorraine Abbott, editor of *RISK newsletter*, said she was looking forward to the time when the Society could again support four issues of the newsletter per year. She also announced that the proceedings of the 1987 Annual Meeting held in Houston had been published and the 700-page volume was available from Plenum Publishers. The proceedings of the 1986 Annual Meeting held in Boston were in camera-ready form and were being transmitted to Plenum. Both volumes are being offered to SRA members at a price of \$45. The non-member price is \$69.50. (Abbott's staff prepared the camera-ready pages for both volumes.)

NOTE: SRA members may order the 1986 or 1987 SRA proceedings by sending a \$45 check made out to Plenum Publishers to: Dianne King-Maamari, 233 Spring Street, New York, NY 10013-1578.

Schwing announced that SRA's 1990 Annual Meeting will be held October 7-10 at the Intercontinental Hotel in New Orleans. Curtis Travis, SRA's president-elect, heads the 1989-90 Annual Meeting Committee.

Following the reports, President Schwing asked for announcements and comments from the floor.

Jim Shanteau and Robin Keller announced new initiatives of the National Science Foundation's Decision, Risk, and Management Science Program (see September 1989 issue of this newsletter).

James Byrd pointed out that the Alar controversy had hit the agricultural industry and suggested that the Society volunteer its services in the debate.

Several comments centered on the hotel room costs for the meeting, with some saying limited budgets forced them to stay in other hotels. Sue Burk of the Secretariat pointed out that the hotels selected for the meetings must have adequate space and they tend to be the most expensive.

Quotes from Kennedy

Stanford President Donald Kennedy, who is a former Commissioner of the Food and Drug Administration, was the speaker at SRA's luncheon banquet on October 31. The following are excerpts from that address:

"If only we had been where we are now [in risk analysis] when I was tested in the period '77 to '79 before angry aggregations of congressmen, I would have had a much easier time of it. Congratulations to you for having taken us so far."

"No matter how accurate the estimates of risks and benefits are, the political process can find a way to do what it wishes when the issues seem important enough to do so. [With respect to the saccharin debacle:] As one cartoonist put it, cancer-causing products should be taken off the market except when people enjoy them. Any accomplished risk assessor ought to be able to understand that."

"However global we can make it, however broadly accepted we can get the principles to be among the

various parts of the government, and however sensible we can be about prioritizing it, the ultimate reality is that risk assessment will always be carried on in an atmosphere of some uncertainty....and in an environment in which there are important contests between different public policy objectives. Therefore, the same numbers are going to be used in equations by different people and for different purposes. I come back to that again and again, because I think it's such an important feature of the environment in which you people try to do business."

"The progress you have made in the past 10 years in gaining public trust and confidence in the discipline is admirable and very, very encouraging. I think 'trust' enters the very definition of risk in such a fundamental way that it becomes part of the calculations themselves. As fast as we wish to improve the quality of the science of risk analysis, I think we have to work at the same time on the improvement of trust, and, truly, that depends a lot on all of you. I wish you well."

One member complained that many of the social science sessions were held simultaneously. Brian Fagan, program co-chair, said that in many cases session chairs requested specific times. He also pointed out that a long lead time is needed to properly work out a program. Extending the program to 3-1/2 days was suggested from the floor.

Bringing the meeting to a close, President Schwing handed the gavel to incoming President Garrick, whose first official act was to present a plaque of appreciation to Schwing. Garrick then stated: "Everywhere we go today we hear that we are going to be driven by the issues of risk. The thing that this Society has is that very important and absolutely essential quality to move forward without fear." Surveying the audience, he then added another important strength: "Few societies,"

he said, "bring such odd characters together."

Luncheon Banquet

Following an elegant luncheon on Tuesday, SRA members heard Stanford University President Donald Kennedy speak on "Lessons from the War Zone." Some of his remarks are included in the lead story of this newsletter and in the box above.

Other Activities

Other reports from the 1989 Annual Meeting are scattered throughout this newsletter. These include reports by Jim Wilson on the Society Liaison Committee, by Catherine St. Hilaire on the Chapter Liaison Meeting, and by Vlasta Molak on the organization of an international communication network for SRA.

SRA International Network Organized

A group of 20 individuals from four continents met with SRA's international coordinator and newly elected secretary, Vlasta Molak, in San Francisco on October 30 to form an international communication network that would expand SRA activities throughout the world. Most of the attendees were interested in specific geographical areas, but all felt that cooperative efforts were mandatory to ensure that rational decision-making processes are used in introducing new and maintaining old technologies, especially in developing countries. Also, the network will facilitate the formation of international sections of the Society in various countries.

Molak points out that the 1990s will be a decade of new opportunities for SRA to have an international impact. Events in Eastern Europe are making those countries much more accessible and are also uncovering tremendous environmental problems, many of which must be approached from a global perspective.

In order to promote the communication network, *RISK newsletter* is publishing the names and addresses provided by the attendees as follows:

Elmer Akin, U.S. Environmental Protection Agency, Region IV, Atlanta, GA 30365. Phone: 404-347-2234.

Tim Auton, ICI PLC Central Toxicology Laboratory, Alderley Park, Macclesfield, Cheshire SK10 4TJ, United Kingdom.

Vincent Covello, School of Public Health, Columbia University, 60 Haven Avenue, Room B-1, New York, NY 10032. Phone: 212-305-3464.

Shaul Feller, CEMA (14), P.O. Box 2250, Haifa 31021, Israel.

Saburo Ikeda, Institute of Socioeconomic Planning, University of Tsukuba, Tsukuba, Ibaraki 305, Japan. Phone: 0298-53-5380. FAX: 0298-55-3849.

Roger Kasperson, CANTED, Clark University, 950 Main Street, Worcester, MA 01610. Phone: 508-751-4605.

Howard Kunreuther, Center for Risk and Decision Process, Wharton School, University of Pennsylvania, Philadelphia, PA 19104. Phone: 215-898-4589 E-mail: KUNREUTHER@WHARTON.UPENN.EDU.

Ron Landy, U.S. Environmental Protection Agency, Region IV, 345 Courtland Street, Atlanta, GA 30365. Phone: 404-347-3866.

Gary D. Leich, Atomic Energy of Canada Ltd., Pinawa, New Brunswick ROE 1h0, Canada. Phone: 204-753-2311. FAX: 204-753-2455. E-mail: LEICHG@WNRE.AECL.CDN.

Torbsorn Malmfors, Malmfors Consulting HB, Kammakargatan 48, S-111 60 Stockholm, Sweden. Phone: 46-8119020. FAX: 42-61-212822.

Vlasta Molak, 8987 Cotillion Drive, Cincinnati, OH 45231. Phone: 513-521-9321. BITNET: CDCVBM@EMUVM1

Gabriel Raggio, Simultech, Damonmill Square, Concord, MA 01742. FAX: 508-371-7942.

Itzak Ravid, CEMA (17), P.O. Box 2250, 31021 Haifa, Israel.

Ortwin Renn, CANTED, Clark University, Worcester, MA 01610. FAX: 508-751-4600.

Normand Richer, Department of Public Health, 5945 Gouin West, Suite 200, Montreal, Quebec, Canada. FAX: 514-338-3155.

Mason Rumney, Interlink, Box 4307, Steamboat, CO 80477. Phone: 303-879-6345. FAX: 303-879-1599.

Julio Salinas, 1372 High Street, Westwood, MA 02090.

James Shanteau, Decision, Risk and Management Science Program, National Science Foundation, Room 336, Washington, D.C. 20550. FAX: 202-357-7795. BITNET: JSHANTEA@NSF.

Ola Svenson, Psychology, University, S-10691 Stockholm, Sweden.

Anna Vari, Department of Policy Research, SUNY at Albany, Milne 300, Albany, NY 12222. Phone: 518-785-3369.

Richard Wilson, Department of Physics, Harvard University, Cambridge, MA 02138. Phone: 617-495-3387. FAX: 617-495-0416. BITNET: WILSON@@HUHEPL.

Edwin Zebroski, Electric Power Research Institute, PO Box 10412, Palo Alto, CA 94303. Phone: 415-855-2000.

The geographical areas in which the attendees are particularly interested are as follows:

Africa-Landy	India-Kasperson, Molak, Rumney
Argentina-Molak	Israel-Feller, Ravid
Australia-Rumney	Japan-Ikeda, Molak
Austria-Kunreuther	Jordan-Rumney
Brazil-Molak	Korea-Ikeda
Bulgaria-Landy	Latin America-Raggio, Salinas
Canada-Leitch	New Zealand-Rumney
China-Ikeda, Kasperson	People's Republic of China-Rumney,
Developing Countries-Covello,	Wilson
Molak, Salinas	Poland-Zebroski
Eastern Europe-Molak, Vari	South America-Landy
Egypt-Zebroski	South Asia-Ikeda
Europe-Feller, Leitch, Ravid	Switzerland-Kunreuther
Far East (Indonesia, Thailand)-	Taiwan-Molak
Renn	United Soviet Socialist Republic-
France-Zebroski	Kasperson, Leitch, Wilson,
Germany-Zebroski	Zebroski
Hungary-Vari	Western Europe-Renn, Vari
Iceland-Landy	

Others interested in joining the network are encouraged to contact Molak or others on the above list. Molak's address is: Vlasta Molak, 8987 Cotillion Drive, Cincinnati, Ohio 45231. Phones: 513-533-8334 (business); 513-521-9321 (residence).



Vlasta Molak, SRA secretary and international coordinator, with Saburo Ikeda, SRA-Japan secretary.

Workshop on Global Change Held

On October 11-13, 1989, Clark University's Center for Technology, Environment, and Development (CENTED) hosted an International Workshop entitled "Understanding Global Environmental Change: The Contributions of Risk Analysis and Risk Management." An initiative of the Human Dimensions of Global Change Programme in Toronto, the meetings were co-sponsored by SRA and Clark University's Graduate School of Geography and funded by the United Nations University. Although limited to 25 participants, distinguished scholars of risk analysis, global environmental change, and international development from some 13 countries attended. The workshop addressed four major themes: the contributions and limits of risk analysis, vulnerability theory, environmental change in developing countries, and lessons from risk management. William Clark of Harvard University, Diana Liverman of the University of Wisconsin, and Timothy O'Riordan of the University of East Anglia prepared background papers. A workshop report is currently in preparation. Those who would like to receive copies should contact the workshop coordinator, Roger E. Kasperson, Director, CENTED, Clark University, 950 Main Street, Worcester, Massachusetts 01610.

Forum on Extreme Events

The first in a series of miniforums to be sponsored by the SRA Conference and Workshop Committee to help meet the demand for continuing education in the field of risk analysis was held in Washington, D.C., December 12-13. Attendees of the forum, entitled "Forum on Risk of Extreme Events," represented both state/federal governments and industry. Lectures were presented by Elizabeth Anderson, Yacov Y. Haimes, Stanley Kaplan, and Alton D. Slay.

SRA Carcinogen Risk Assessment Course

The Society for Risk Analysis will hold its fifth annual course, "New Directions in Cancer Risk Assessment" on May 21-23, 1990, at the Hyatt Regency, Bethesda, Maryland. The intent of the course is to provide an introductory overview of methodologies, assumptions, and new research in cancer risk assessment. Lectures will show how to perform and interpret risk assessments and how to use them in risk management. Special emphasis will be given to new developments in pharmacokinetics, biomonitoring, and reproductive, immunological, and neurological risks. Lecturers will be Roy Albert, Professor and Chairman, Department of Environmental Health and Kettering Laboratory, University of Cincinnati; Elizabeth Anderson, President, Clement Associates, Inc.; Mildred Christian, President and Director, Argus Research Laboratories, Inc.; Vincent Covello, School of Public Health, Columbia University; Bernard Goldstein, Professor and Chairman, Environmental and Community Medicine, Robert Wood Johnson Medical School; Loren Koller, College of Veterinary Medicine, Oregon State University; Lester Lave, Graduate School of Industrial Administration, Carnegie-Mellon University; Richard Reitz, Associate Scientist in Toxicology, Chemical Industry Institute of Toxicology; Ellen Silbergeld, Environmental Defense Fund; Curtis Travis, Director, Office of Risk Analysis, Oak Ridge National Laboratory; James Trosko, Professor of Pediatrics and Human Development, University of Michigan; Chris Whipple, Technical Manager, Risk and Health Science Department, Electric Power Research Institute. For further information, please call Curtis C. Travis, 615-576-2107 or FTS 626-2107 or Mary Oran, 615-574-8438 or FTS 624-8438.

New Journal: Risk—Issues in Health & Safety, published quarterly by Franklin Pierce Law Center, 2 White Street, Concord, NH 03301. Contact: Carol Ruh.

Ethics of Risk Communication Addressed by Houston Conference

A March 28 conference sponsored by the University of Houston's Institute for Business, Ethics, and Public Issues and cosponsored by the Citizens' Environmental Coalition will focus on "Who and What Will the Public Believe?" with respect to environmental risks. The answer to that question, say the organizers, will have more to do with how specific environmental and environmental health issues are resolved and what new policies, laws and regulations are developed for environmental risks during the next decade than any other single factor. While scientifically based risk assessments must continue to be pursued vigorously to put risks into perspective, the power of public opinion to influence legislation and regulation is well known, and who and what the public believes will ultimately determine what happens.

The conference will particularly address the practices, responsibilities and ethics of risk communicators—both individuals and organizations, including the media. Participants will be asked how the public should be treated: (1) as a jury to be educated so that it might make the best decision, or (2) as an electorate to be appealed to (or, even, manipulated) and convinced of a (frequently valid) point of view. Will the public know which role it is playing at any particular time?

Speakers at the conference will represent a wide variety of business, public interest, governmental, legal and academic viewpoints. For information on contacts for the conference, see the Calendar of Events on page 19.

SRA Chapter Representatives Meet

On Wednesday, November 1, representatives of SRA chapters attending the Society's 1989 Annual Meeting in San Francisco met with Catherine St. Hilaire, SRA chairperson and contact councilor for Chapter Liaison and Relations, to discuss issues of interest to the chapters and to share information among the chapters.

Improving Communications

Chapter representatives indicated the need for local chapters to be informed by SRA Secretariat staff of new national SRA members located in a local chapter area, as well as nonmembers in the area who attend the SRA national meeting. Also, a contact is needed to provide guidance to new chapters that are forming. Chris Whipple (EPR) offered to serve as the contact person. It was also suggested that new chapters be informed of the availability of "seed money" from the national SRA. The attendees concluded that more timely, routine provision of mailing lists (or mailing labels) of members, SRA meeting attendees, and the membership directory by the SRA Secretariat would be most helpful to the chapters.

The representatives also agreed that it would be helpful to know about other chapters' activities. Newsletters could help if chapters publishing newsletters would place one contact person from the other chapters on the mailing lists. St. Hilaire agreed to send a list of chapter contacts to each chapter to facilitate this. The SRA newsletter could be used for communicating chapter activities and the practice of submitting chapter news should continue. Another suggestion was that St. Hilaire periodically send letters to the chapters asking "What have you done?" "What have you planned?" Finally, a quarterly conference call organized by St. Hilaire might also be helpful.

Expanding SRA's Membership

Several chapters have devised methods for expanding their membership. For example, the National Capital Chapter charges \$5.00 to attend a local meeting which serves as one-year dues for the chapter. Thus, a meeting attendee automatically becomes a new member. The Northern California Chapter uses mailing lists of related societies to mail SRA brochures to potential members. Ideas that were discussed but not pursued included trying to tap into "pockets" of potential interest, such as large companies/industries in areas with chapters. Also, staff members and officials of state and local governments are likely to be interested in SRA chapter activities, and an effort to reach these individuals would likely be fruitful.

Setting Chapter Dues

There was some discussion of setting dues so that membership is not precluded because of high dues. It was

Greater Pittsburgh SRA's Newest Chapter

When the SRA Council met during the 1989 annual meeting, it officially approved the Greater Pittsburgh Chapter as the Society's 12th chapter.

Providing local SRA affiliation for western Pennsylvania, the Greater Pittsburgh Chapter has met twice, with 27 members attending its last meeting. The chapter is planning to meet again in March. It hopes to co-sponsor with the Pittsburgh Chamber of Commerce a one-day meeting on air toxics.

1989-90 officers of the chapter are: President Richard DeCesar of Keystone Environmental Resources, President-elect Julian Andelman of the University of Pittsburgh, Secretary Jon Merz of Carnegie-Mellon University, and Treasurer Jeanette Trauth of the University of Pittsburgh. Also elected are three councilors: David Puposzar, Allegheny County Health Department; Barbara Henry, P.T.G. Industries; and Timothy Prothero.

Anyone desiring information about the Greater Pittsburgh Chapter may contact: Richard DeCesar, 3000 Tech Center Drive, Monroeville, Pennsylvania 15146 (Phone: 412-825-9631); or Jon Merz, Carnegie-Mellon University, Baker Hall 129, Pittsburgh, Pennsylvania 15213 (Phone: 412-268-5609).

observed that often SRA is a "second" society with primary membership in the traditional scientific societies for individual disciplines. The value of qualifying as a nonprofit organization to render dues tax deductible was also discussed. This issue was referred to the Secretariat so that advice could be provided to the chapters. It was also suggested that Paul Deisler could provide some insight about local chapter tax rules, and St. Hilaire agreed to obtain a copy of the Lone Star Chapter by-laws and distribute them to chapter contacts.

Editor's Note: RISK newsletter is eager to receive news from the chapters. Please send your information to the address shown on the back page of this issue.

Columbia Cascades Chapter

The Columbia Cascades Chapter approved bylaws and formed nominating, program, and education committees at their October 28 meeting. Richard Palmer presented a

discussion of risk ranking, including a method of hierarchic structuring which he has been developing. The January 27 meeting scheduled a presentation by Tim Earle and George Cvetkovich on "Risk Judgment and Communication." On February 24, the chapter will meet at NOAA-Regional Center, 7600 Sand Point Way NE, Seattle, Washington, in the Conference Room of Building 2. There will be a presentation on "Seismic Hazards" by Dave Engebretson, a geologist who has been working on earthquake preparedness and response. Inquiries concerning the Columbia Cascades Chapter may be addressed to George Cvetkovich, Western Institute for Social and Organizational Research, Department of Psychology, Western Washington University, Bellingham, Washington 98226 (Phone: 206-676-3544).

East Tennessee Chapter

East Tennessee Chapter has scheduled a February 2 meeting and lecture in Knoxville. The lecture is entitled "Are Risk Benefit Trade-Offs Possible in Siting Hazardous Facilities?" and will be presented by Howard C. Kunreuther of The Wharton School, University of Pennsylvania (Philadelphia).

New England Chapter

The New England Chapter elected officers for 1989-90: Dave Burmaster, president-elect, and Yee Cho, treasurer. They join the new president Dale Hattis.

Anyone having interest in risk assessment in the Boston area has a unique opportunity. President Hattis explained in a November letter to chapter members that for several

years a group called the Boston Risk Assessment Group (BRAG) had been conducting informal meetings at the Massachusetts Institute of Technology "where people involved in doing risk assessments of various kinds could exchange their experiences in confronting the nitty gritty analytical issues." Recently, New England Chapter of SRA has been meeting on the same dates as BRAG, following BRAG's afternoon meeting with a Chapter dinner and seminar. These seminars tend to "to be more oriented to policy/management and 'big picture' philosophical issues." Hattis proposed coordinating meeting times and dates as well as selecting at least vaguely related seminar topics, whenever possible, for the two organizations. In December, the BRAG topic was "Assessing Risks for Incineration Facilities—Lessons from Recent Experience," presented by Michael Hutcheson of the Massachusetts Department of Environmental Protection. The New England SRA seminar which followed was "Unlocking Siting Disputes," presented by John Ehrenfeld of the Hazardous Substances Management Program at the Massachusetts Institute of Technology. In January, Russell Malcolm of the U.S. Environmental Protection Agency - Narragansett Laboratory presented "*In vitro* Studies of Chemical Effects on Gap-Junctional Communication: Role of Biotransformation in Toxicant Detection and Use of Assays in Risk Assessment" for BRAG, followed by the New England SRA seminar by Barbara Beck of the Gradient Corporation on "Risk Assessment of Alkylphenols—'Baby Aspirin Equivalency' Approach."

On February 7 the New England Chapter will hear Harlan M. Dolinar, an attorney with McGregor, Shea and Dolinar, on the topic "The Use of Risk Assessment in Facility Siting." For more information call Margaret Round at 617-367-8522/8540. (BRAG will not meet in February.)

1989 SRA Sustaining Members

During 1989, 18 corporations contributed between \$500 and \$2500 to the Society for Risk Analysis. SRA gratefully acknowledges these corporate members, listed as follows:

American Cyanamid Company

American Petroleum Institute

Amoco Corporation

ARCO

Arthur D. Little, Inc.

Calirol, Inc.

Clement Associates

Dow Chemical Company

E.I. Dupont Company

Electric Power Research Institute

Gillette Company

Hoffman-Larouche

Monsanto Company

Proctor & Gamble Company

Resources for the Future

Science Applications International Corporation

Shell Oil Company

Versar, Inc.

“Should anyone be allowed to present a paper at SRA Annual Meeting?”

Richard Wilson, Harvard University

(Editor's Note: The SRA Council has had an ongoing discussion both on the quality of papers presented at the Society's annual meetings and on the quality and size of the corresponding proceedings. The considerable attention given to these subjects at the Council's San Francisco meeting prompted one of the councilors, Richard Wilson, to submit the following essay to RISK newsletter. The Council and the Publications Committee are interested in receiving your views on this issue.)

The practice of the Society of Risk Analysis has been to accept (almost) any paper submitted by a member for presentation at the SRA Annual Meeting. This policy has both advantages and disadvantages.

One of the well-respected societies that has followed this practice for many years is the American Physical Society. Any APS member can present a 10-minute paper at any meeting of the society, provided the abstract is received on time and in the proper format. In addition, a member can submit such a paper on behalf of a non-member (usually a student). This policy has worked well. It is of interest to see how the APS experience might apply to SRA.



Richard Wilson (right) chats with Bruce Ames, University of California, Berkeley, at SRA's 1989 Annual Meeting.

The APS has found it useful to have several sessions of invited papers in its annual meetings, and the organizers of the meetings always solicit suggestions for such invited papers. There are also some mixed sessions: an important invited paper for 30 minutes followed by a set of 10-minute papers by students.

The mixed sessions usually include papers of lower quality than most people want to hear; however, there are also occasional papers that are better than anyone expected. It is these surprises that make the procedure especially valuable.

There is also a procedure for “post-deadline” papers for important results. These are accepted at the discretion of the conference organizers; they are announced at the conference and are usually put at the tail end of the relevant session. Sometimes there is a complete (well-attended) post-deadline session such as that on “Cold Fusion” at the April 1989 APS meeting.

Associated with this APS policy is a tradition of strong discipline in the timing of talks. Much to the amazement of the press, Nobel Laureates are held to 10 minutes, as well as students. I know of only one exception to this in the past 40 years. When Nuclear Magnetic Resonance was presented at an annual meeting, there was an invited talk from Robert Pound and a 10-minute talk by Felix Bloch from another group. After 10 minutes, it was proposed and approved unanimously by those present to allow a second 10 minutes.

Perhaps one reason that this policy works well for the APS is that abstracts are printed before each meeting but no proceedings are published. Any member wanting his talk published must submit it to one of the Society's journals—*Physical Review*, *Physical Review Letters*, or *Reviews of Modern Physics*. It is these journals that are carefully reviewed. Perhaps the publication of the proceedings of the SRA annual meeting allows a “cheap and easy” publication procedure that overly encourages bad talks; to publish an “unrefereed” paper, all an author has to do is to come to the meeting and give a talk. The APS does not have that problem.

All members of the Society should contemplate the present practice and consider whether or not it should be changed.

Membership Brochures Available

Attracting new members is very much a grass roots activity. *Your* colleagues, students, and customers are among those who will benefit most from membership in SRA. A new SRA brochure has been prepared by Gary Flamm, chair of the Membership Committee, and the Secretariat. Contact the Secretariat (Phone: 703-790-1745) for a supply of the new brochure. Pass them out to those who can benefit from our rich diversity.

News from SRA-Japan

SRA-Japan will hold its 1990 Annual Meeting and a special workshop on Saturday, June 2, at the University of Tokyo, Department of Urban Planning, from 1-5 PM. The workshop, titled "Risk Analysis in Disaster Management (in Relation to Global Environmental Changes)," will feature as guest speakers T. Kinoshita from the National Institute of Disaster Prevention and five persons from administration, mass-media, and academic fields. The convener of the meeting is T. Katayama of the University of Tokyo. The presentation and discussions will appear in the forthcoming *Japanese Journal of Risk Analysis*.

Approximately 100 participants attended SRA-Japan's 1989 Annual Conference held on December 9 in Toranomon, Tokyo. The conference received attention from the press, including news coverage by the *Yomiuri*. The program was presented in five sessions which included both review and contributed papers: Risk Analysis in Epidemiology, Prevention of Disasters in Urban Areas, Product Liabilities and Risks, Public Decision Making, and Risk Communication. Abstracts of the papers in Japanese are available from the secretary of SRA-Japan: Saburo Ikeda, Institute of Socio-Economic Planning, The University of Tsukuba,

Third Annual Meeting

SRA-Japan

June 2, 1990

University of Tokyo

1-1-1 Tennoudai, Ibaraki 305, Japan
(Phone: 0298-53-5182; FAX: 0298-53-5070).

News from SRA-Europe

SRA-Europe will hold its Second Conference at the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria on April 2-3. Titled "Risk Analysis, Standards, and Abnormal Occurrences," the conference is coorganized by IIASA and cosponsored by the World Health Organization (WHO) Regional Office for Europe. Participation is open to

both members and non-members of the Society. Subjects that will be covered include: work in hand on establishing appropriate standards, case reports of abnormal occurrences, environmental impacts and future analysis, risks following large accidents, primary prevention, relationships between risk analysis and the social or organizational environment, risk communication, risk cultures and philosophy, physical and mental health issues, and methodological issues in applying normative frameworks to social or sociotechnical systems. (Note: Selected papers presented at the first SRA-Europe Conference, held November 10-11, 1988, in Laxenburg, were published in the December 1989 issue of the SRA journal *Risk Analysis*.)

Kiev Conference. The SRA-Europe executive committee with the support of the WHO Regional Office for Europe, the Economic Commission for Europe, and OECD has also organized a special SRA conference

on "Environmental Risk Management: The European Case" in Kiev, USSR, November 22-23. The conference is coorganized by the Institute for Environment and Systems Analysis, Amsterdam, and the Cybernetics Institute, Kiev.

The major goals of the Kiev conference are "to enhance and facilitate the interaction between eastern and western European professionals" and "to increase the understanding of the very serious risk problems at both 'sides.'" Session topics will include: industrial risks, environmental risks to agriculture/fishery, and risks for small diffuse sources (like the transportation system). To request more information on the conference, send your name, institute, address, zip code, country and business telephone number to: P.J. Stallen, SRA-Europe, c/o Emmastraat 16, 1075 HT Amsterdam, The Netherlands (FAX: +31 20 751576).

Second Conference

SRA-Europe

April 2-3, 1990

Laxenburg, Austria

Journal Contents

The table of contents of Vol. 10, No. 1 of the SRA journal *Risk Analysis* is reprinted below.

EDITORIALS

Michael Gough, *How Much Cancer Can EPA Regulate Away?*
Bernard Goldstein, *The Problem with the Margin of Safety: Toward the Concept of Protection*

LETTERS TO THE EDITOR

Dale Hattis, *Three Candidate Laws of Uncertainty Analysis*
Hari Rao and David Brown, *House Fire: A Source of Dioxins*

WORKSHOP ON INDOOR AIR QUALITY

Haluk Ozkaynak, *Introduction to the Risk Assessment Workshop on Indoor Air Quality*

Brian Leaderer, *Assessing Exposures to Environmental Tobacco Smoke*

James Repace and Alfred Lowrey, *Risk Assessment Methodologies in Passive Smoking*

Anna Wu and Jonathan Samet, *Environmental Tobacco Smoke: Exposure-Response Relationships in Epidemiologic Studies*

Jan A. J. Stolwijk, *Assessment of Population Exposure and Carcinogenic Risk Posed by Volatile Organic Compounds in Indoor Air*

Lance Wallace, *Major Sources of Exposure to Benzene and Other Volatile Organic Chemicals*

Jonathan Samet and Richard Hornung, *Review of Radon and Lung Cancer Risk*

Richard Gammage, *Exposure to Formaldehyde in Indoor Air*

Thomas Starr, *Quantitative Cancer Risk Estimation for Formaldehyde*

ARTICLES

James Hammitt, *Subjective Probability-Based Scenarios for Uncertain Input Parameters: Stratospheric Ozone Depletion*

Stephen Hora and Ronald Iman, *Bayesian Modeling of Initiating Event Frequencies at Nuclear Power Plants*

Yacov Haimes, Duan Li, and Vijay Tulsiani, *Multiobjective Decision-Tree Analysis*

Frank Denton, *The Effects of Publication Selection on Test Probabilities and Estimator Distributions*

Eric Hirst and Martin Schweitzer, *Electric-Utility Resource Planning and Decision Making: The Importance of Uncertainty*
Ralph Keeney, *Mortality Risks Induced by Economic Expenditures*

Gary Machlis and Eugene Rosa, *Desired Risk: Broadening the Social Amplification of Risk Framework*

Bruce Tomm, Cheryl Travis, Richard Goeltz, and Raymond Phillippi, *Knowledge-Based Representations of Risk Beliefs*

SOFTWARE REVIEWS

Greg Belcher and Holly Hattemer-Frey, *A Program for Calculating Health Risks from Hazardous Waste Incineration*

W. D. Rowe, *Response from Rowe Research and Engineering Associates, Inc.*

SOFTWARE LISTINGS

Paul Moskowitz, *EPIcode*

BOOK REVIEWS

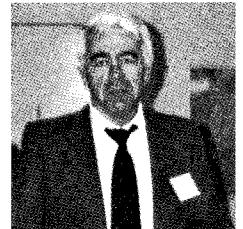
Robin White



Left: President B. John Garrick.

Bottom: Dick Schwing; Elmer Akin and Ron Landy; Kristi Jacobs and Sue Burk; Dick Burk.

Right: Lubow Jowa, John Bukowski, and S. T. Almodovar.



CALL FOR PAPERS

1990 ANNUAL MEETING OF THE SOCIETY FOR RISK ANALYSIS

Intercontinental Hotel, New Orleans, Louisiana
October 7-10, 1990

THEME: Promise of Risk Analysis in the '90s

PROGRAM CATEGORIES:

Engineering and Statistics
Health and Environment
Social and Policy Issues

TOPICAL ISSUES:

Safety at Chemical Plants
Waste Minimization
Nuclear Accident Management
Life Support Systems
Medical Waste
Reauthorization of Superfund/RCRA
Effectiveness of Remedial Alternatives
Quantitative Risk Assessment for Noncancer Effects
Improving Risk Characterization
Use of Animal Sentinels
Biomarkers of Exposure
Use of Plants as Toxicological Indicators
Use of Fish in Cancer Research
Pharmacodynamic Modeling
Innovative Methods in Toxicology
Additives — Growth Hormones
Global Issues
Decision Making Under Uncertainty
Risk Communication
Decision Making and Ethics
Community Involvement
Proposition 65
Waste Management Strategies
Siting of Hazardous Facilities
Medical Decision Making

Abstract forms and instructions will be mailed to every SRA member in February. If you need extra forms or would like to pass material on to colleagues who are not members, contact the SRA Secretariat at 8000 Westpark Drive, Suite 400, McLean, VA 22102 (Phone: 703-790-1745).

SRA Liaison Committee Meets

For the third consecutive year, members of the SRA Liaison Committee, chaired by Jim Wilson, American Industrial Health Council, held a dinner meeting in conjunction with the Society's annual meeting. Meeting this year on the evening of October 30, the group included Vicki Bier, Dan Byrd, Randy Freeman, Robin McGuire, Tom McKone, Fritz Seiler, Linda Schierow, and Allen White. Committee members fielded several suggestions, such as holding joint meetings with other societies with at least one day of overlapping sessions, interchange between societies to arrive at a unified decision-making process following a risk analysis, and the need to focus on related risks simultaneously (i.e., not reducing one risk to zero before even considering a related risk).

The societies represented in the Liaison Committee and the SRA members serving as the representatives are as follows:

Air Pollution Control Association. Thomas McKone, Lawrence Livermore Lab, P.O. Box 5507, L-453, Livermore, California 94550 (Phone: 415-422-7535).

American Anthropological Association. Steve Rayner, Oak Ridge National Laboratory, Energy Division, P.O. Box 2008, Oak Ridge, Tennessee 37831 (Phone: 615-574-5348).

American Association of Aerosol Research. Fritz Seiler, International Technology Association, 5301 Central Avenue, NE, Suite 700, Albuquerque, New Mexico 87108 (Phone: 505-262-8800).

American Bar Association. Daniel A. Bronstein, Michigan State University, Department of Resource Development, East Lansing, Michigan 48824-1222 (Phone: 517-353-5326).

American College of Toxicology. Daniel Byrd, 6322 Cavalier Corridor, Falls Church, Virginia 22044 (Phone: 202-682-8839).

American Industrial Health Council. James Wilson, 1330 Connecticut Avenue NW, Washington, DC 20036 (Phone: 202-659-0060).

American Institute of Chemical Engineers. Randy Freeman, Monsanto, 800 N. Lindbergh Boulevard, St. Louis, Missouri 63167 (Phone: 314-694-6808).

American Physical Society. Fritz Seiler (see address above).

American Political Science Association. Branden B. Johnson, New Jersey Department of Environmental Protection, CN 409, 401 East State Street, Trenton, New Jersey 08625 (Phone: 609-633-2324).

American Psychological Association. George Cvetkovich, Western Institute for Social & Organizational Research, Department of Psychology, Western Washington University, Bellingham, Washington 98225 (Phone: 206-676-2901).

American Psychology Society. George Cvetkovich (see address above).

American Sociological Association. George Oliver Rogers, Oak Ridge National Laboratory, Energy Division, P.O. Box 2008 - Mail Stop 6206, Building 4500 N, Oak Ridge, Tennessee 37831.

Association of American Geographers. Allen White, Center for Technology (CENTED), Clark University, 950 Main Street, Worcester, Massachusetts 01610 (Phone: 617-426-5844).

Earthquake Engineering Research Institute. Robin K. McGuire, Risk Engineering, Inc., 4255 Pine Ridge Road, Olden, Colorado 80403 (Phone: 303-278-9800).

Health Physics Society. William Mills, Oak Ridge Associated Universities, 1019 19th Street, Suite 700, Washington, DC 20036 (Phone: 202-653-5505).

Institute of Electrical and Electronics Engineers. Kazuhiko Kawamura, Electronic Engineering Management of Technology, P.O. Box 1674, Station B, Vanderbilt University, Nashville, Tennessee 37235 (Phone: 615-322-2735).

The Institute of Management Science (TIMS). Vicki Bier, University of Maryland, Department of Nuclear Engineering, College Park, Maryland 20742 (Phone: 301-454-2430).

National Science Foundation. Beverly Fleisher, American Agricultural Economics Association, 1800 G Street, NW-L602, Washington, DC 20550 (Phone: 202-634-4636).

Operations Research Society of America (ORSA). Vicki Bier (see above).

Society for Epidemiological Research. Linda Erdreich, Environmental Research Institute, 575 8th Avenue, 14th Floor, New York, New York 10018 (Phone: 212-560-1209).

Systems Safety Society. Thomas Janicik, Science Application International Corporation, 711 Bay Area Boulevard, Suite 210, Webster, Texas 77598.

Call for Nominations for SRA Awards

The SRA Awards Committee invites nominations for the two categories of awards presented by the Society. One category is the Distinguished Contribution Award, which honors an individual (who need not be a member of the Society) whose work has significantly advanced the scientific foundations or the applications of risk analysis. The other category is the Distinguished Service Award, which is presented to an SRA member who has performed meritorious services on behalf of the Society.

Please submit the names of your nominees and a brief paragraph supporting each by March 30, 1990, to:

Paul F. Deisler, Jr.
11215 Wilding Lane
Houston, Texas 77024

Risk Assessment Attributes Identified in Report

An Ad Hoc Study Group chaired by Fred D. Hoerger, Dow Chemical Company, and including a number of other SRA members has issued a report with the two-fold purpose of (1) improving risk assessment reports by identifying and illustrating desirable attributes that authors of risk assessment reports should strive to achieve and (2) providing risk managers with a background for understanding and using complex assessment reports. The study was sponsored by the American Industrial Health Council, the U.S. Environmental Protection Agency, the Department of Health and Human Services, and the Society for Risk Analysis.

During the study, the group reviewed 10 state-of-the-science risk assessment reports as case studies and interacted with several practicing risk managers. Their results are given as a set of general attributes plus four specific sets formulated under the risk assessment framework developed by the National Academy of Sciences: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. The study focused on carcinogenic risks, but many of the attributes and conclusions apply to other types of health risk assessments.

The final report, *Presentation of Risk Assessments of Carcinogens*, is available from: American Industrial Health Council, 1330 Connecticut Ave., NW, Suite 300, Washington, D.C. 20036. Attn: Lisa Odoms.

Call for Nominations for SRA Officers

The SRA Nominating Committee solicits suggestions for nominees for the following positions in the Society's 1990 elections:

President-Elect
Three Councilors

(The present secretary and treasurer are each serving the first year of a two-year term. Councilors serve three-year terms and may not succeed themselves. However, after one year has elapsed, a councilor may be nominated for a second term.)

Please submit names of your suggested candidates and a brief paragraph supporting each by March 30, 1990, to:

Vincent T. Covello
Center for Risk Communication
Columbia University
Room B-1, 60 Haven Avenue
New York, New York 10032
FAX: 212-749-3590

NRC Report on Risk Communication Available

An 18-month study of risk perception and communication sponsored by the National Research Council and funded by 19 different public and private organizations has resulted in the publication of a report titled *Improving Risk Communication*. John Ahearne, chair of the authoring committee and executive director of Sigma Xi, a scientific research society, says the study was initiated when an earlier study in the federal government pointed to risk communication as a key element of risk management.

The NRC report says that risk communication must be seen as an interactive process of exchanging information and opinions among individuals, groups, and institutions that will lead to informed choices. Two broad themes of the report are that communications efforts should be deliberately and systematically oriented to specified audiences and that openness is the surest policy. Also, risk communication should be an important and continuing part of risk management, not just an afterthought.

A common difficulty in risk communication, the report says, is that those who most need the information are frequently the least likely to pay attention to it; conversely,

those seeking information may find it difficult both to find and to interpret.

Contrary to popular belief, the report finds that journalists and the media are not significant independent causes of problems in risk communication. Rather, the problem lies at the interface of science and journalism. Scientists and risk managers need to recognize the important role journalists play in identifying disputes and maintaining the flow of information, and journalists need to understand how to frame the technical and social dimensions of risk issues.

Finally, the NRC report points out that while good risk communication will not always resolve conflicts over risk, poor risk communication will almost always make it worse. The report itself offers concrete guidance for improving risk communications, as well as a philosophical framework in which to consider the problems of risk communication.

Improving Risk Communication can be ordered from the National Academy Press, 2101 Constitution Avenue NW, Washington, D.C. 20418 (send \$29.95 for paperback, \$39.95 for hardback); or call 202-334-3313.

Positions Available

Social Psychologist/Risk Communicator

Argonne National Laboratory is seeking to fill a position requiring expertise in social/psychological factors associated with risk perceptions of technological hazards related to the siting of facilities producing noxious effluents and of other environmental and public policy issues. Work as a member of an interdisciplinary team addressing such topics. Some travel may be necessary. Position requires Ph.D. or ABD, strong oral and written communication skills, and highly developed quantitative, applied research skills. Knowledge of computer applications is also necessary. Candidates under serious consideration will be asked to provide samples of written work and to make a formal presentation at the time of the interview. Interested individuals should send vitae, a statement of research interests, and names and addresses of three technical references to:

Nancy L. Griparis
Box J-EID-40081-4C
Employment and Placement
Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439
(An Equal Opportunity/Affirmative Action Employer)

Risk Assessment Career Opportunities

Eckenfelder Inc., one of the leading firms in environmental consulting, has career opportunities in the area of human health and environmental risk assessment in its Nashville, Tennessee, office. These risk assessments are being performed in support of various CERCLA, RCRA, and TSCA projects and in litigation activities for Eckenfelder Inc.'s industrial, legal, and private sector clients. Entry level candidates with a desire to apply their academic backgrounds to the risk assessment field are being sought with 0 (for M.S.) to 3 (for B.S.) years experience in environmental science, solid/hazardous waste management, environmental engineering, or related fields. Broad, multi-disciplinary backgrounds in environmental science, environmental engineering, biology and ecology, or similar degrees, and a knowledge of the risk assessment process with an emphasis on environmental risk analysis are preferred. The responsibilities of successful candidates would include: providing office and field support in the execution of public health and environmental risk assessment tasks in the context of industrial waste management projects, including assistance in the areas of exposure assessment; analysis of the behavior, fate, and transport of chemicals in the environment; toxicity assessment; data management and analysis; environmental modeling; biota studies; and ecological assessments. Knowledge of CERCLA and RCRA guidance and regulations is desired. Strong verbal and written communication skills are required. For consideration, please send cover letter, resume, and transcripts to:

Linda M. Meador
Director of Human Resources
Eckenfelder Inc.
227 French Landing Drive
Nashville, Tennessee 37228
(An Equal Opportunity Employer)

Project Manager—Risk Assessment

Environ Corporation, a leading scientific consulting firm specializing in health and environmental risk assessment and risk management, is currently seeking senior-level health scientists for our Princeton, New Jersey, office. Typically, our work involves the assessment of the fate and transport and toxicological effects of chemical mixtures as they might affect public health and the environment. An immediate opening exists for a health scientist (i.e., toxicologist or related discipline) with an advanced degree (Ph.D. preferred) and a minimum of ten years' experience in health risk assessment. Experience in consulting work is strongly preferred; public health or regulatory affairs experience is desirable. Successful candidates must demonstrate their ability to resolve complex technical and scientific issues; possess superior writing skills; be able to communicate effectively with staff and clients; and have the ability to manage projects and supervise technical staff. Environ offers competitive salaries and excellent benefits. Send resume and salary history to:

Personnel—Dept. RA
Environ Corporation
210 Carnegie Center
Suite 201
Princeton, New Jersey 08540
(An Equal Opportunity Employer)

EPA Risk Communicators

The U.S. Environmental Protection Agency's Risk Communication Program (RCP) is looking for qualified people to join its staff for 1-3 years as part of the Intergovernmental Personnel Act (IPA) Program. The RCP's activities are designed to help people a) put risks in context, b) understand trade-offs between risks and costs, c) become informed participants in individual and community risk reduction decisions, and d) understand residual risks that remain after action. The RCP has four components. *Research* is oriented toward understanding how people form their risk perceptions and how alternative forms of communication change these perceptions. *Consulting and analysis* assists program offices involved in specific risk communication activities, especially in evaluating their effectiveness. *Training* helps agency staff to incorporate the results from the research and analysis in their ongoing risk communication activities. *Outreach* for regional and program offices includes a risk communication library and a hotline. Conferences, articles, speakers, and seminars (such as for the media) reach broader audiences. 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, please contact:

Ann Fisher, Manager
Risk Communication Program
PM-221, U.S. Environmental Protection Agency
Washington, D.C. 20460
Phone: 202-382-5500

Safety and Risk Assessment Professionals

Primatech Inc. has immediate openings for engineers, scientists and computer programmers to work in technical and managerial positions on risk and safety consulting and technical software development projects. Primatech specializes in providing risk and safety consulting, training, and software development services for companies that handle or process hazardous materials, such as chemical and petroleum companies. Our company is experiencing substantial growth, and qualified personnel are sought to join our team. Several positions are available in the following locations: Princeton, New Jersey; Columbus, Ohio; Houston, Texas; and Los Angeles, California. Primatech offers excellent career opportunities and an attractive compensation and benefits package. We invite individuals with a preferred minimum of three years related experience to submit their resumes for consideration in confidence to:

Personnel Manager
Primatech Inc.
700 Ackerman Road, Suite 170
Columbus, Ohio 43202
(An Equal Opportunity Employer)

Position Sought

Risk communicator is interested in applying her skills to the theory and practice of explaining technological and environmental health risks to audiences who are not scientifically conversant. Has excellent communication and organizational skills and background appropriate for industrial, academic, governmental, or nonprofit setting. Experience in toxicology and sociological and statistical methods. BA, biology; MS, Natural Resource Policy, emphasis on risk communications. If you have this type position available, please contact:

C. M. Springer
Department of Natural Resources
Cornell University
310 Fernow Hall
Ithaca, New York 14853

Calendar of Events

—March 1-September 20. COURSES OFFERED BY HARVARD SCHOOL OF PUBLIC HEALTH, Boston, Massachusetts: Radon in Buildings: Sources, Biological Effects, Monitoring, & Control (March 1-2); Fundamentals of Industrial Hygiene (March 26-30); Occupational & Environmental Radiation Protection (March 26-30); Measurement Techniques for the Industrial Environment: Air Quality & Ventilation (April 23-27); Asbestos Abatement Projects: Certification for Inspectors, Monitors, Management Planners, and Designers (April 30-May 4); Radiation Protection Instrumentation (May 7-11); Work Schedules and Circadian Rhythms: Strategies for Improving Health, Safety, & Performance in 24-Hour Operations (May 30-31; May 30-June 1); Environmental Radiation Surveillance (June 11-15); In-place Filter Testing Workshop (June 11-15); Testing & Certification of Biological Safety Cabinets (June 11-15; certification option June 11-18); Management and Disposal of Radioactive Wastes (July 10-14); Respiratory Protection and Chemical Protective Clothing (August 13-17); Indoor Air Quality (September 18-20). Contact: Mary F. McPeak, Office of Continuing Education, Harvard School of Public Health, 677 Huntington Avenue/Department B, Boston, Massachusetts 02115 (Phone: 617-432-3515).

—March 28. CONFERENCE ON BUSINESS, SOCIETY, AND ENVIRONMENTAL CRISES: WHO AND WHAT WILL THE PUBLIC BELIEVE? University of Houston Institute for Business, Ethics and Public Issues (see story in this newsletter). Cosponsored by the Citizens' Environmental Coalition. Contacts: P. F. Deisler, Jr. (Phone 713-749-6672) or J. J. Miller (713-749-6690); or write the College of Business Administration, University of Houston, Houston, Texas 77204-6283.

—April 2-3. 2ND CONFERENCE OF SRA-EUROPE, IIASA Conference Center, Laxenburg, Austria. Theme: Risk Analysis, Standards and Abnormal Occurrences (see story in this newsletter). Contact Björn Wahlström, IIASA, A-2361, Laxenburg, Austria (Phone: 02236-71521*0; FAX: 02236-71313; Telex: 079137 iiasa a)

—May 1-2. DRINKING WATER AND PUBLIC HEALTH, University of Massachusetts, Amherst. Cosponsors include the U.S. Environmental Protection Agency and U.S. Agency for Toxic

Substances and Disease Registry. For general information, contact: Charles E. Gilbert, Northeast Regional Environmental Public Health Center, University of Massachusetts, Amherst, Massachusetts 01003-0081 (Phone: 413-545-3164 or FAX: 413-545-4692).

—May 8-10. HAZTECH INTERNATIONAL 90, George R. Brown Convention Center, Hall D, Houston, Texas. Sponsored by The Institute for International Research. Contact: Rachele Scheinbach, Institute for International Research—Bellevue, 13555 Bel-Red Road, Bellevue, Washington 98009 (Phone: 1-800-468-7644; 206-746-4173 in WA; FAX: 206-643-2146).

—May 21-23. SRA 5TH ANNUAL COURSE ON CARCINOGEN RISK ASSESSMENT, Hyatt Regency, Bethesda, Maryland (see story in this newsletter). Contact: Curtis C. Travis (Phone: 615-576-2107; FTS: 626-2107) or Mary Oran (Phone: 615-574-8438; FTS: 624-8438).

—June 2. 3RD ANNUAL MEETING OF SRA-JAPAN, University of Tokyo. Special Workshop: Risk Analysis in Disaster Management (see story in this newsletter). Contact: T. Katayama, University of Tokyo, or Saburo Ikeda, University of Tsukuba, Institute of Socio-Economic Planning, Tsukuba 305, Japan. (Phone: 0298-53-5182 or -5170; FAX: 0298-55-3849 or -5070).

—June 18-22. 7TH INTERNATIONAL CONFERENCE ON RELIABILITY AND MAINTAINABILITY, Brest, France (see May 1989 newsletter).

—June 28-29. 2ND EUROPEAN CONFERENCE OF INTERNATIONAL ASSOCIATION FOR IMPACT ASSESSMENT, Lausanne, Switzerland (see May 1989 newsletter).

—September 26-28. HAZTECH INTERNATIONAL 90, Brooks Hall, San Francisco, California. Contact: Rachele Scheinbach (see above).

—September 30-October 3. INTERNATIONAL SYMPOSIUM ON HAZARDOUS MATERIALS/WASTES: SOCIAL ASPECTS OF FACILITY PLANNING AND MANAGEMENT, Harbour Castle Westin, Toronto, Ontario, Canada. Organized by The Institute for

(Continued on page 20.)



RISK newsletter
is published by
The Society for
Risk Analysis

Lorraine S. Abbott, *Editor*
Mary Bryant, *Editorial Assistant*
Katie Ingersoll, *Production Assistant*

Society Officers:

B. John Garrick, *President*, 1989-90
Curtis C. Travis, *President-Elect*, 1990-91
Vlasta Molak, *Secretary*, 1989-91
Raymond F. Boykin, *Treasurer*, 1989-91
Richard C. Schwing, *Past President*, 1988-89

Members of SRA Council:

George Apostolakis, 1990
W. Gary Flamm, 1990
Richard Wilson, 1990
Catherine St. Hilaire, 1991
Joellen Lewtas, 1991
James D. Wilson, 1991
R. A. (Tony) Cox, 1992
Peter Barton Hutt, 1992
Roger E. Kasperson, 1992

Secretariat: Richard J. Burk, Jr., Executive Secretary,
Society for Risk Analysis, 8000 Westpark Drive, Suite
400, McLean, VA 22101 (Phone: 703-790-1745; FAX:
703-790-9063).

Publications Chairman: Richard C. Schwing, Operating
Sciences Department, General Motors Research Labora-
tories, 30500 Mound Road, Warren, MI 48090-9055 (Phone:
313-986-1348; FAX: 313-986-0574).

Note: Contributions to the newsletter should be faxed to
615-927-8379 or mailed to the following address:

Lorraine S. Abbott
Editor, *RISK newsletter*
Tec-Com, Inc.
1303 Wilson Road
Knoxville, TN 37912
(Phones: 615-927-4640; 615-687-1327 [Res.])

Calendar of Events (Continued from page 19.)

Social Impact Assessment. One of the keynote speakers will be Stephen Lewis, former Canadian Ambassador to the United Nations. Call for papers: 150-400 word abstract with tentative title, subject matter, and topic with the author's name, address, and telephone number submitted no later than March 3, 1990 to Social Aspects Symposium Headquarters, Conference and Seminar Services, Humber College, 205 Humber College Boulevard, Etobicoke, Ontario M9W 5L7 Canada (Phone: 416-675-5077; FAX: 416-675-0135). For information contact: Ingrid Norrish, Conference Management Director, Social Aspects Symposium (Phone: 416-675-3111, ext. 4459; FAX: 416-675-0135).

—October 1-2. 6TH ANNUAL MEETING OF THE INTERNATIONAL SOCIETY OF REGULATORY TOXICOLOGY AND PHARMACOLOGY, Stouffer Concourse Hotel, Washington, D.C. Theme: What Can Be Done to Improve Public Understanding of the Toxicological Process? For more information, contact: Secretary, C. Jelleff Carr, 6546 Belleview Drive, Columbia, Maryland 21046 (Phone: 301-992-9083).

—October 2-4, 1990. HAZTECH INTERNATIONAL 90, David L. Lawrence Convention Center, Pittsburgh, Pennsylvania. Contact: Rachele Scheinbach (see above).

—October 7-10. ANNUAL MEETING OF THE SOCIETY FOR RISK ANALYSIS, Continental Hotel, New Orleans, Louisiana (see Call for Papers in this newsletter).

—November 22-23. ENVIRONMENTAL RISK MANAGEMENT: THE EUROPEAN CASE, Kiev, USSR. Sponsored by SRA-Europe with WHO-Regional Office for Europe, Economic Commission for Europe, and OECD. Coorganized by Institute for Environment and Systems Analysis, Amsterdam, and Cybernetics Institute, Kiev (see story in this newsletter). Contact: P.J.M. Stallen, IMSA, Emmastraat 16, 1075 HT Amsterdam, The Netherlands (Phone: 020-662-0696; FAX: 020-751-576).

—February 4-7, 1991. INTERNATIONAL CONFERENCE ON PROBABILISTIC SAFETY ASSESSMENT AND MANAGEMENT (PSAM), Beverly Hills, California. Sponsored by the Society for Risk Analysis. For further information, contact: George Apostolakis (Phone: 213-825-1300; Telex: 3716012 UCLA LSA; or FAX: 213-825-0761).

SOCIETY FOR RISK ANALYSIS
8000 Westpark Drive, Suite 400
McLean, VA 22101

Bulk Rate
U.S. Postage
PAID
Permit No. 309
Knoxville, TN