

# RISK *newsletter*

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## SRA's 1986-87 OFFICERS, COMMITTEES TO BUILD ON EARLIER GAINS

With attendance at the 1986 SRA Annual Meeting in Boston approximately twice that of any previous year, the number of chapters more than doubling in 1986, and the membership roster and society activities both increasing in recent months, President Paul F. Deisler, Jr., and other society leaders have a significantly broadened base on which to build during the 1986-87 year. As pointed out in his President's Column, Deisler has definite ideas about the areas in which the society should concentrate its efforts. To facilitate these efforts, he has initiated steps to improve the liaison between SRA's various chapters and committees and to increase the participation of the general membership in society activities. As is apparent from the stories throughout this newsletter, several new activities are already under way and more are in the planning stage. It should be a good year.

### NEW OFFICERS ANNOUNCED

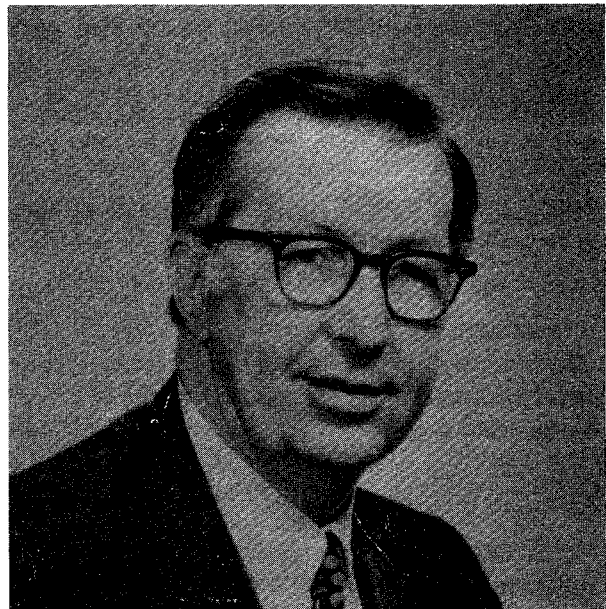
New SRA officers elected to serve with President Paul Deisler during the 1986-87 year include the president-elect and three councilors beginning three-year terms. The offices of secretary and treasurer were not up for election this year, since Michael Gough, secretary, and Steven Swanson, treasurer, are each serving two-year terms.

#### Covello Is President-Elect

Vincent T. Covello, director of the Risk Assessment Program of the U. S. National Science Foundation in Washington, D.C., is the society's new president-elect. In that position, he assumes the chairmanship of the Annual Meetings Committee and membership on the Executive Committee. In addition, he is an appointed member of the Publications Committee. A cofounder of SRA in 1981, Covello recently received the society's Distinguished Service Award (see story elsewhere in this newsletter).

#### North, Tardiff, Svenson Are Councilors

The newly elected councilors, each to serve until 1989, are D. Warner North, Robert G. Tardiff, and Ola Svenson.



SRA President Paul F. Deisler, Jr.

North, of Decision Focus, Inc., Los Altos, California, received a PhD in operations research from Stanford University in 1970. He currently performs

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## PRESIDENT'S COLUMN

### A Look Backward and a Look Forward

The 1986 Annual Meeting is behind us, as is most of the year 1986, and we can now say with certainty that we have had a good year.

Attendance at this year's annual meeting was approximately double that in 1985, and so many papers were submitted for presentation that, for the first time, it was necessary to schedule four parallel sets of sessions. Despite all the care taken, it was inevitable that this expansion would create conflict for those who would have liked to have heard papers being given simultaneously in different sessions. We've had this same problem in previous years with three parallel sets of sessions, and we can only expect it to remain with us as activities in the broad field of risk analysis continue to grow and diversify. Happily, it is a welcome problem since it is a symptom of good health in the field of risk analysis, and it is the kind of problem I prefer to deal with, as compared with other possible kinds.

Looking over the program of the annual meeting and reflecting on the papers I heard, I am pleased to note two things in particular: (1) over a quarter of the papers had to do with various aspects of risk *management*, as opposed to risk *analysis*, and (2) the program covered a diversity of disciplines, all being brought to bear on the subject of risk.

The name of our society does not contain the words "risk management." Although it is entirely possible for risk analysis to be studied and developed in its many aspects as a valid, entirely academic effort, the principal application of risk analysis—risk management—is of daily interest to many members of the society. Moreover, understanding the needs of risk managers helps suggest work in the area of risk analysis that might otherwise not be undertaken. Judging from the 1986 program, I believe we are on the right track.

I was especially pleased with the diversity of disciplines at the meeting since one of the aims of the society, as I see it, is to bring together diverse elements and to foster the transfer of knowledge and understanding among them. We seem to be accomplishing this aim among the various branches of science and technology, and the society can truly be called "scientific and technological." It can also be characterized as being interested in managerial, legal and policy matters associated with risk. However, as yet there is little contribution from other relevant scholarly fields.

Where are the philosophers and the other scholars? They, too, have valid and useful insights to contribute to the understanding of risk and to the moral and ethical questions involved in managing the risks of different types of hazards. I, for one, would like to see them and their work represented in the society. I believe we need to make a point of contacting members of these fields to convince them that it is to their benefit to make contributions to the twin fields of risk analysis and risk management and that these are relevant fields for them to work in. In so doing, we will also add an important missing facet to our field of study.

In summary, the 1986 Annual Meeting has suggested to me that we need to work further in developing these two important areas—risk management and diversity of disciplines—in order to have a better, more effective and more complete society. The success of the meeting also poses a real challenge to President-Elect Vince Covello and the Annual Meetings Committee he chairs, and to General Program Chairman Don Stevenson and his committee, to organize a 1987 Annual Meeting to be held in Houston next fall that is comparable to the one we have just had.

In his final President's Column in the September issue of this newsletter, Lester Lave summarized the status of the society in the areas of membership, the establishment of related organizations in other nations,

the formation of new local chapters, communications with members, finances, local workshops held during the year, the journal and its size, and a project under development with the National Academy of Sciences. In all these areas, the society is in good condition; indeed, its condition has improved significantly in all of them. As an example, whereas a year ago the society could count only two chapters, it now has five and seven more are in the process of formation.

During the coming year, we must keep up the momentum we have developed in each of these areas. To that end, the committee chairs are actively pursuing the responsibilities entrusted to them and, to ensure that plans are realistic, each chair is preparing a statement of goals for early implementation in the coming year.

Lester Lave also mentioned that he had received numerous offers of help and was embarrassed that it was not always possible to come up with suitable tasks. I may have the same difficulty. To try to improve this situation, because we need all the help we can get, I have two things to tell the membership. First, committee memberships are not closed; anyone wishing to help in any of the areas of the committees—and these are very broad—should contact the committee chairs and ask to be put to work. Second, the SRA Council has adopted the concept of “Contact Councilors” and has named specific councilors for two or more areas of interest. The names of the contact councilors and their respective areas are given elsewhere in this newsletter, and you are encouraged to contact the appropriate councilor if you have an idea for work which will benefit the society. If all goes well, offers to help will be more easily matched with work assignments during this coming year.

As Lester Lave further remarked in his September column, “the strength of a voluntary organization lies in the enthusiasm and energy of its members.” At this point, with a truly successful year behind us and much to be accomplished ahead of us, our level of enthusiasm should be high and so should our strength. If we can apply this strength effectively and with dedication throughout the year, the society should become a truly strong, broad and effective organization to the benefit of each of its members. Let’s get on with it!

Paul F. Deisler, Jr.  
December, 1986

President’s Address: 11215 Wilding Lane, Houston, TX, 77024, Phone 713-467-3080.

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## 1986-87 SRA COMMITTEES NAMED

President Paul Deisler has announced the following appointments to SRA committees for the year 1986-87:

**Annual Meetings.** Vincent Covello (chair), Ray Boykin, Tony Buhl, Roger Kasperson, Don Stevenson, Steven Swanson.

**Awards.** Paul Slovic (chair), B. John Garrick, Ola Svenson, Robert Tardiff.

**Chapters.** Chris Whipple (chair), Louis Cox, Peter Groer, D. Warner North, William Rish, Pieter-Jan Stellen, Steven Swanson, Frank Weir.

**Conferences and Workshops.** Elizabeth Anderson (chair), Joseph Fiksel, Elisabeth Paté-Cornell, Curtis Travis, Roger Kasperson.

**Definitions.** Larry Gratt (chair).

**Executive.** Paul Deisler (chair), Vincent Covello, Michael Gough, Lester Lave, Steven Swanson.

**Finance.** Howard Kunreuther (chair), Joseph Fiksel, D. Warner North, R. Talbot Page, Steven Swanson, V. R. R. Uppuluri.

**Gifts and Grants.** Tony Buhl (chair), Michael Gough, Peter Hutt, D. Warner North, Steven Swanson.

**Liaison.** Michael Baram (chair), Joyce McCann, Alan Moghissi, Jim Wilson.

**Management and Development.** M. Granger Morgan (chair), Michael Gough, Howard Kunreuther, D. Warner North.

see 1986-87 COMMITTEES, page 4

## SRA COUNCIL APPOINTS CONTACT COUNCILORS

At the November 11, 1986, meeting of the SRA Council, a plan was approved to appoint "contact councilors" who will serve as specific contacts with the council for committee chairs. Each SRA committee chair thus will have a representative/advocate on the council who will communicate council decisions and other matters of interest to the committee, and will also assist in a timely resolution of committee problems.

The role of the councilor is not to be a passive one; it is expected that each councilor will be generally aware of the work of the committees he represents and can discuss that work with the council. On the other hand, it is not intended that all communications to the council go through a councilor. Direct communications between the various committee chairs and councilors and with the president should continue as in the past, with the appropriate contact councilor being kept informed as necessary.

One advantage of using the contact councilor system is that the council as a whole will have a more comprehensive view of the society's activities and will have a greater understanding of how the work of each committee fits into the overall program. Moreover, since councilors serve for three years, contact councilors will be able to provide a continuity of the program beyond the concerns of the immediate year.

The contact councilors for the 1986-87 year are listed below, along with the committees and committee chairmen (in parentheses) that they represent:

**Paul Deisler:** Executive (Deisler), Annual Meetings (Covello), Publications (Lave).

**Vincent Covello:** Chapters (Whipple), Membership (Garrick).

**Steven Swanson:** Gifts and Grants (Buhl), Finance (Kunreuther).

**Lester Lave:** Nominations (Anderson), Awards (Slovic).

**B. John Garrick:** Conferences and Workshops (Anderson), Publicity (Inhaber).

**Michael Gough:** Management and Development (Morgan), Liaison (Baram).

**Samuel C. Morris:** Special Projects (Morris), Research Support (Lave), Definitions (Gratt).

## NEW OFFICERS

(cont. from page 1)

research in the application of decision analysis to acid rain, toxic waste, and other environmental risks.

Tardiff, of Environ Corporation, Washington, D.C., received a PhD in pharmacology/toxicology from the University of Chicago in 1968. His current work is in the toxic effects of environmental chemicals: interspecies extrapolations, low-dose extrapolations, and risks from chemical mixtures.

Svenson is a professor in the Department of Psychology of the University of Stockholm (Sweden). In 1971 he received a Filosofie Doktor from the University of Stockholm, and in 1973 he was awarded Docent of Psychology. His current interests are in decision making, risk perception, and risk management.

SRA members continuing to serve as councilors are Samuel Morris, whose term will end in 1987, M. Elisabeth Paté-Cornell (1987), B. John Garrick (1988), Peter Barton Hutt (1988), and R. Talbot Page (1988). Pieter-Jan Stallen, whose term ended in 1986, will also serve another year to fill the vacancy left by Covello's election as president-elect. M. Granger Morgan and Arthur C. Upton both completed their terms as councilors in 1986.

## Lave on Executive Committee

Lester B. Lave, the immediate past president of the society, will continue as a member of the SRA Executive Committee, along with the five other elected officers. As past president, Lave assumes the chairmanship of the Publications Committee. He also chairs the Research Support Committee.

## 1986-87 COMMITTEES

(cont. from page 3)

**Membership.** B. John Garrick (chair), Tony Buhl, Joseph Fiksel, Fred Hoerger, Robert Tardiff.

**Nominations.** Elizabeth Anderson (chair), B. John Garrick, Chris Whipple.

**Publications.** Lester Lave (chair), Vincent Covello, Michael Gough, Curtis Travis.

**Publicity.** Herbert Inhaber (chair).

**Research Support.** Lester Lave (chair).

**Special Projects.** Sam Morris (chair), Elisabeth Paté-Cornell, Robert Tardiff.

## CORPORATE CONTRIBUTOR LIST INCREASES

SRA Treasurer Steven Swanson reports that by the time the SRA 1986 Annual Meeting was held in November the list of corporate contributors to the society had increased from the 11 recognized in the September newsletter to a total of 20. Those on the list either contributed \$500 or more to SRA, and thus are sustaining members of the society, or they sponsored a specific project for the annual meeting or both. The list of corporate contributors, to whom the society is indebted, now includes the following:

**American Industrial Health Council**  
**American Petroleum Institute**  
**Canadian Aviation Safety Board**  
**Chemical Industrial Institute of Toxicology**  
**Coca Cola Company**  
**Dow Chemical USA**  
**Electric Power Research Institute**  
**Environmental Protection Agency**  
**Environ Corporation**  
**Exxon Corporation**

**Ford Motor Company**  
**General Motors Corporation**  
**Gillette**  
**Mobil Oil Company**  
**Monsanto Chemical Company**  
**National Center for Toxicological Research**  
**Nuclear Regulatory Commission**  
**Rohm and Haas Company**  
**Shell Oil Company**  
**Stauffer Chemical Company**

### 1987 SRA ANNUAL MEETING TO BE IN HOUSTON

The 1987 SRA Annual Meeting will be held November 1-4 in Houston, Texas at the Wyndham Hotel, Greenspoint. The Lone Star Chapter will be the host chapter, and the theme for the meeting will be "Risk Assessment: Setting National Priorities."

A wide-ranging list of potential session topics is under discussion for the meeting, including natural disasters, health effects, space, liability, engineering, environmental, and risk communication. In order to accept an increasing number of submitted papers for the meeting, which is gaining a well-deserved reputation as a prestigious forum for presenting new information on risk analysis and overviews of important issues, poster sessions are to be added to the program. Several combined sessions with other associations are also being developed.

A more complete announcement and a call for papers for the 1987 meeting will be made later. In the meantime, additional information can be obtained from the general chairman for the meeting: Don Stevenson, Shell Oil Company, PO Box 4320, Houston, Texas 77210 (Phone 713-241-0032).

### CALL FOR NOMINATIONS FOR SRA ANNUAL AWARDS

The SRA Committee on Awards invites nominations for the two categories of awards presented annually by the society. One category is the Distinguished Contribution Award, which honors an individual 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. (Note: Presidents and past presidents are ineligible for these awards.) Please submit the names of your nominees and a brief paragraph supporting each to:

Paul Slovic  
Decision Research  
1201 Oak Street  
Eugene, Oregon, 97401

## REPORT FROM THE 1986 ANNUAL MEETING..... by Lester Lave

The 1986 Annual Meeting of the Society for Risk Analysis, held in Boston November 9–12, was the most successful ever. In terms of sheer numbers, the 450 attendees approximately doubled the attendance of any of our previous meetings. As a result, SRA gained 100 new members and ended the year with a membership increase of about 30% over last year. In addition, the Northern California Chapter and SRA-Europe both received official status, the latter as a section of SRA.

### Crowded Program Encouraging, Discouraging

So many papers were submitted to the 1986 meeting that many had to be rejected. Even so, it was necessary to hold four parallel sessions throughout the meeting, and at the business meeting, several persons complained about not being able to hear all the papers they were interested in.

Milton Russell, Assistant Administrator of the Environmental Protection Agency for Policy, Planning and Evaluation, opened the meeting with an eloquent statement on the need for risk assessment to improve the management of environmental risks. That evening, after a full day of sessions, SRA awarded its Distinguished Contribution Award to Frank Reginald Farmer of the United Kingdom (see story elsewhere in this newsletter).

Following the sessions on Tuesday, a three-hour evening session on Chernobyl and its lessons was conducted with speakers from several organizations, including the International Atomic Energy Agency and the Electric Power Research Institute, and from several countries, including Sweden, Germany, and Poland. They discussed the health consequences of the accident and the similarities and dissimilarities between the Soviet and U.S. reactor programs. This session was especially well attended, even though it meant that those present had to shorten or forego an evening out.

On Wednesday, one of the four sessions consisted of an all-day workshop on Material Data Safety Sheets. This workshop was cosponsored by the American College of Toxicology and was organized by Daniel Byrd (see related story). Also on Wednesday, Harry Otway of the European Economic Community spoke at the luncheon on the many aspects of risk communication.

The 1986 meeting reflected the increasing interest in risk analysis and management. It also showed that our ability to model risk problems and give helpful answers has increased and that SRA meetings result in much useful information exchange. With the

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intellectual ferment displayed, members will be looking forward to next year's meeting in Houston.

### Publications Committee Report

The SRA Publications Committee, overseeing publication of the society's journal and newsletter, had good news, which, however, led to bad news. First, the journal *Risk Analysis* has accumulated a backlog of good papers. Our contract with Plenum Publishing Company specifies that each issue shall be 100 pages. Editor Curtis Travis has been managing to get larger issues published, but the contractual level cannot be exceeded indefinitely. The society has negotiated with Plenum to increase the size of the journal by 50%, so that future issues will be 150 to 170 pages. The bad news is that it will cost more (see Finance Committee report below).

Second, for the first time, the newsletter met its quarterly schedule, thanks to the efforts of Michael Gough and Lorraine Abbott. The size of the newsletter has also increased considerably. Its regularity itself generates news, and new features have been added. For example, we added a column in which members announce job and address changes. Now we are adding a column allowing members to insert brief ads (free of charge) in search of new positions. In the future, we may publish employment ads from companies, but the decision to do that has been deferred in order to investigate all its implications.

Costs for the newsletter are also increasing, not only because of its more frequent publication and larger size, but also because the society has now assumed its full publication costs, whereas in the past the newsletter has been partially subsidized.

### Finance Committee Report

Except for the increasing costs of the society's publications, Treasurer Steven Swanson had excellent news about the society's finances. An increasing number of members and sponsoring organizations,

especially the latter (see related story), resulted in a surplus of revenues over expenditures last year, and the outlook for next year also looks good. In fact, we hope to accumulate a surplus equal to one year's budget by the end of next fiscal year. The improved situation has already allowed SRA to sponsor more meetings and workshops, to help the European section get started, and in general to look for ways of serving our members and the public. We cannot relax, however, since we need to fund additional activities, to foster the growth of local chapters, and to extend the reach of SRA. For the first time, the society can afford to take some risks and think more expansively.

In spite of this bright outlook, the SRA Council found it necessary to increase the annual dues for regular members to \$50 per year and those for student members to \$30 per year. The increase is necessary to ensure that the increasing costs of the larger-sized journal can be met, as well as the costs of the newsletter.

The dues increase is reflected in the membership renewal forms that have been mailed to the SRA members. Included with the forms is a membership survey form, the results of which will be used to update SRA records and publish a new membership directory.

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## SRA-ACT SYMPOSIUM ON MSDSs DRAWS CROWD IN BOSTON

The all-day symposium on Material Safety Data Sheets (MSDSs) jointly sponsored by SRA and the American College of Toxicology (ACT) on November 12 at the SRA annual meeting in Boston was attended by more than 90 persons and resulted in several followup activities being planned, including the publication of the papers in the international journal *Toxicology and Industrial Health*.

An MSDS is a brief statement of the hazards of a substance and the appropriate precautions for handling it. Unlike a label, an MSDS is not attached to a container of the substance. MSDSs tend to give more extensive characterizations of substances than labels do, but risk assessors are concerned that MSDSs leap from statements of hazard directly into communication, omitting the expected procedural steps of risk analysis in between.

Historically, firms have used MSDSs as internal tools to inform persons with some health expertise and/or knowledge of safety procedures. This situation changed with the promulgation of hazard communication regulations by the Occupational Safety and Health Administration, and it changed again with the recent passage of community right-to-know provisions in the Superfund Amendments and Reauthorization Act. MSDSs now are a necessary (but not sufficient) step in protecting workers and others in the environment.

### Symposium Included Five Papers

The MSDS symposium was organized by Daniel M. Byrd III of the U.S. Environmental Protection Agency, who as the first speaker introduced the

audience to MSDSs. Other speakers were Blake A. Biles (Jones, Day, Reavis and Pogue) and Clare Boccella (Rohm and Haas Co.), who spoke on "Legal Principles Supporting MSDSs"; Kris Hoover (Arco Chemical Co.) and Richard A. Youngstrom (International Union of Electronic, Electrical, Technical, Salaried and Machine Workers), who spoke on "Toxicology and Industrial Hygiene Principles of MSDSs"; Mary Devine Worobec (Bureau of National Affairs) and Paul Slovic (Decision Research), who spoke on "Communication Principles That Affect MSDSs"; and Steven Lamm (Consultants in Epidemiology and Occupational Health) and David Brown (State of Connecticut and Department of Pharmacology and Toxicology, Northeastern University), who spoke on "Critical Problems with MSDSs."

### Symposium Conclusions

Through interactions between the speakers and attendees, the symposium reached several conclusions, the most important of which can be summarized as follows:

—The purpose of MSDSs is to protect potentially exposed persons; meeting the requirements of regulatory agencies is a minimal contribution toward this objective. A firm that loses sight of the reason for having MSDSs can create financial liabilities for itself.

see SRA-ACT SYMPOSIUM, page 8

## SRA-ACT SYMPOSIUM

(cont. from page 7)

—MSDSs prepared by different authors for the same substance often make contradictory statements about hazards and precautions. Many experts, who otherwise are enthusiastic about the use of MSDSs, are worried about their usefulness because of such inconsistencies.

—MSDSs often are written in a style that is difficult to understand. Making them easy to read tends to enlist the assistance of a firm's workers in dealing with community right to know.

—Conceptual models of MSDS contents, objectives and uses may be helpful to MSDS authors. These models suggest ways to improve MSDSs, such as making risk-based instead of hazard-based statements, providing exposure information, preparing MSDSs in three parts (narrative summary, required information, and referential information), leaving a trail of documentation, obtaining a technical evaluation or peer review of a firm's MSDSs, and having experts on hand to explain and update them.

—Empirical data and research support are lacking for MSDSs.

—The importance of MSDSs is increasing rapidly. In fact, the extensive use of MSDSs is a national experiment with the safety of the public that has a large social investment in it.

### Followup Activities

With the current interest in MSDSs, SRA and ACT anticipate holding more meetings on the subject, perhaps with an expanded format as a "how-to" course. Also, some of the participants are already engaged in group exchanges of information. One thing that is needed for future activities is a list of companies that produce MSDSs for clients or provide services for authors of MSDSs and would like to display their capabilities to interested groups. If you know of any such companies, encourage them to contact: Daniel M. Byrd III, SRA-ACT Liaison, 6322 Cavalier Corridor, Falls Church, VA 22044 (Phone 703-354-4948).

*NOTE: The unfailing support of SRA President Lester Lave and ACT President Marshall Steinberg contributed greatly to the success of the SRA-ACT symposium. Also, the financial support of the Monsanto Chemical Company is gratefully acknowledged.*

—Based on report from Daniel M. Byrd III

## EUROPEAN NEWS

### SRA-EUROPE APPROVED; ESRA LAUNCHED

SRA members from Europe who attended the 1986 SRA Annual Meeting in Boston returned home with the approval of SRA-Europe as a section of the society. Thus they can approach their winter advisory meeting with an official affiliation with the society and proceed with setting policy and creating a management board.

One of the first issues to be addressed will be the relationship of SRA-Europe with the European Safety and Reliability Association (ESRA), which had its launch meeting on October 22-24, 1986. SRA-Europe and ESRA hope to establish a liaison which will allow them to coordinate and combine the efforts of both societies. The common topics and goals of SRA-Europe and ESRA are the roots for the mutual desire for such a liaison.

The ESRA launch meeting was attended by more than 120 invited participants from the European Community member countries and Switzerland (see article on ESRA in March, 1986 issue of this newsletter). The participants were from various interest groups, such as industry management and project safety departments, academia, research centers, and regulatory authorities. The group engaged in a wide-ranging exchange of information and expression of interest in the use of safety and reliability techniques in industrial and other applications. The consensus was that ESRA should contribute in reaching European positions in the criteria and standard-setting mechanisms and promote associations with internationally sponsored research and development programs. Also, the significance of united efforts of researchers and industrialists was stressed.

In a concluding address, the deputy director-general for science, research, and development of the Commission of the European Communities (CEC) pointed out that ESRA can contribute in maintaining a competitive position for European industries. He also emphasized the role that medium and small companies are to play.

—Based on report from Hans Bohnenblust, Zurich



## FRANK REGINALD FARMER RECEIVES SRA's 1986 DISTINGUISHED CONTRIBUTION AWARD

Frank Reginald Farmer, retired safety advisor to the United Kingdom Atomic Energy Authority, was presented SRA's 1986 Distinguished Contribution Award by President Paul Deisler on the evening of November 10 at the society's annual meeting in Boston. Farmer was cited for his many contributions to industrial safety, especially nuclear safety. Following the presentation, the awardee spoke on the development of risk analysis and its role in social decisions, such as choosing the sites of nuclear reactors and other industries.

### Contributed to Risk-Benefit Analysis

The SRA award follows an earlier U.S. award given to Farmer in 1984 by the American Nuclear Society. The ANS Nuclear Reactor Safety Division presented him with its "Tommy" (Theos J.) Thompson Award for providing technical leadership over a period of 30 years that "provided wisdom and important direction to key elements of the world's nuclear safety activities." He was attributed with being the principal architect of the current probabilistic approach used in nuclear safety or, more generally, in industrial safety, and with playing a major role in the development of meaningful criteria for reactor licensing. The major concepts of risk-benefit analysis used throughout industrial society are an outgrowth of his work, with his "Farmer Curve" recognized as an international tool for such analyses for both nuclear and non-nuclear systems.

Farmer began his career in 1936 with mathematics and physics degrees from St. Johns' College, Cambridge. After 10 years in the chemical engineering industry, he joined the UKAEA where he at first worked on the design of chemical plants at Springfields and Windscale. He later became director of the Safety and Reliability Directorate and set up the Systems Reliability Service (SRS). He retired from the UKAEA in 1979 and is currently a visiting professor at the University of Bradford. He is also editor of the international journal *Reliability Engineering*.

In the United Kingdom, Farmer was for many years a member of the Advisory Committee on the Safety of Nuclear Installations, a committee which advises government agencies on matters affecting the safety of nuclear installations, including design, siting, operation, and maintenance. He was also a member of the Advisory Committee on Major Hazards set up to advise the government on problems

presented by major industrial hazards. From 1966-1972, he was the first chairman of the European Nuclear Energy Agency Committee on Reactor Safety Technology.

Farmer has been an active participant in international studies of nuclear safety, speaking at hearings organized by the British and World Councils of Churches. In 1979, he attended the Gorleben Hearings in Hanover, Germany, to discuss nuclear waste storage and fuel cycle facilities.

### Received Numerous Honors

In 1967 Farmer received the Order of the British Empire (OBE), and in 1981, he was elected a Fellow of the Royal Society (FRS). He was awarded the Churchill Gold Medal by the Society of Engineers in the UK and elected a Fellow of the Institute of Physics, both in 1974. And in 1980 he was elected the Foreign Associate of the U.S. National Academy of Engineering.

Farmer is also well known as an author of over 100 papers presented at national and international meetings, including the Geneva Conferences on the Peaceful Uses of Atomic Energy. He was a major contributor to "Risk," a Royal Society study group report published in 1983.



*EDITOR'S NOTE: The Comings & Goings column is not included in this issue, because no items were received for it. If you have changed jobs recently or have other news of interest to the society, please send the information to: Lorraine S. Abbott, Editor, Risk Newsletter, 1303 Wilson Road, Knoxville, TN, 37912.*

## SECOND ANNUAL COURSE ON CARCINOGEN RISKS SCHEDULED FOR APRIL AT NAC

The Society for Risk Analysis will hold its Second Annual Course on Carcinogen Risk Assessment on April 6-8, 1987, at the National Academy of Sciences in Washington, D.C. Organized by the society's Committee on Conferences and Workshops, the course will cover the risk assessment process, the use of scientific data in risk assessment, risk initiatives in federal agencies, and risk management. Special emphasis will be given to new developments in the areas of biologically based modeling, pharmacokinetics and biomarkers.

Of the 13 lecturers scheduled for the course, eight are returning for the second time. These include Elizabeth L. Anderson, Roy E. Albert, Elizabeth Weisburger, Ron Hart, Todd Thorslund, Curtis C. Travis, Lester B. Lave, and Chris Whipple. Joining them this year are five additional lecturers, Marvin Schneiderman, James Swenberg, Milton Russell, Suresh Moolgavkar, and Frederica Perera. The lecturers and their affiliations are listed in the course program included in this newsletter.

The deadline for preregistration for the course is March 20, the costs being \$475 for SRA members and \$500 for nonmembers. The fees will be increased by \$25 for registration at the meeting. The nonmember registration will include a one-year membership in the society and a one-year subscription to the journal *Risk Analysis*. For further information, contact Curtis C. Travis, FTS 626-2107 or 615-576-2107.

### PROGRAM

**Monday, April 6, 1986**

#### I. Overview of Risk Assessment

The Risk Analysis Process, *Elizabeth L. Anderson, President ICF-Clement*  
Assumptions in Risk Analysis, *Roy E. Albert, Professor and Chairman, Dept. of Environmental Health and Kettering Laboratory, Un. of Cincinnati*

#### II. The Use of Scientific Data in Risk Assessment

Epidemiology Data, *Marvin Schneiderman, National Research Council*  
Animal Bioassay Data, *Elizabeth Weisburger, National Cancer Institute*  
Mechanistic Data, *James Swenberg, Chemical Industry Institute of Toxicology*

**Tuesday, April 7, 1986**

#### III. Risk Initiatives in Federal Agencies

Risk Analysis at HHS, *Ron Hart, Director, National Center for Toxicological Research*  
Risk Management at EPA, *Milton Russell, Assistant Administrator, Environmental Protection Agency*

#### IV. Special Issues in Risk Assessment

Biological Bases for Two-Stage Theory of Cancer, *Suresh Moolgavkar, Hutchison Cancer Research Center*  
Biomarkers, *Frederica Perera, Columbia University School of Public Health*  
Biologically Based Modeling, *Todd Thorslund, ICF/Clement*

**Wednesday, April 8, 1986**

Pharmacokinetics, *Curtis C. Travis, Director, Office of Risk Analysis, Oak Ridge National Laboratory*

#### V. Risk Management

Risk Management, *Lester B. Lave, Carnegie-Mellon University*  
Acceptable Risk, *Chris Whipple, Electric Power Research Institute*

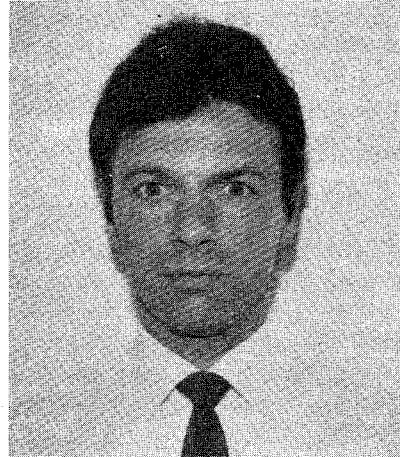
## PRESIDENT-ELECT COVELLO HONORED BY SOCIETY

SRA President-Elect Vincent T. Covello, a cofounder of the Society for Risk Analysis in 1981 and an elected member of the council since that date, received the society's second Distinguished Service Award at the annual meeting in Boston. He was cited for his dedication to the society, serving over the years as chairman of the Publications Committee, Liaison Committee, and Nominations Committee, and this year as chairman of the Annual Meetings Committee. He also served as cochairman of the Annual Meetings Committee in 1981 and 1984. In addition, he has been a member of the editorial board of the SRA journal *Risk Analysis* since its inception.

Both within and outside the society, Covello has played a major role in promoting the goals and objectives of SRA. He has organized over 15 national and international conferences and edited or coauthored 14 books and numerous articles on various aspects of risk assessment and management. He also serves on the editorial board of *Risk Abstracts*. Throughout his career, a major emphasis of his work has been in the area of risk communication.

Covello is currently the director of the Risk Assessment Program of the U.S. National Science Foundation in Washington, D.C. Prior to that he was study director at the National Academy of Science and professor at Brown University. He also served in the U.S. Peace Corps in Nepal in 1968-69. While in

Washington, he has been the recipient of several U.S. Government Superior Performance Awards and Quality of Service Awards.



Vincent T. Covello

Covello has a PhD in quantitative sociology and social psychology from Columbia University and a BA and MA from Trinity Hall College, Cambridge University. He was also a Woodrow Wilson Fellow.

The society's first Distinguished Service Award was presented to Curtis Travis in 1984 for his work as editor of the society's journal.

## INFORMATION NEEDED FOR RESEARCH PROJECT

A current research project at Michigan Technological University on risk communication/education is interested in information about citizen-provided data and its use by hazard managers. Such data might include citizen monitoring (emissions or effects), networks, citizen risk assessments in a community (exposure or health effects), lay identification of hazard elements or critical factors in hazard evolution overlooked by private or public organizations. The emphasis is on *facts* provided by citizens to agencies, independent scientists, etc; political and social data are of interest only inasmuch as they may have affected the

gathering, analysis, presentation, or reception of citizen-generated information. Information on the reception and use (or nonuse) of this information for management of hazards would be of particular interest. Data may include general and continuing examples, as well as limited case studies. Pertinent details include who, what, where, when, how, and why. Names, addresses, and telephone numbers of contacts would also be appreciated. Both government-sponsored and independent efforts are of interest. Material may be sent to Branden B. Johnson, STS Program, Michigan Technological University, Houghton, MI 49931 (Phone 906-487-2116/2113).

## LARGE SYSTEMS SEMINAR DRAWS OVER 100

Over 100 persons attended the seminar on "The Risk Analysis of Large Engineered Systems" held at the Meridian Hotel in Newport Beach, California, on December 5. In addition to representatives from the aerospace, chemical processing, and nuclear industries, the attendees included professors and students from the University of California (Los Angeles, Irvine, and Santa Barbara) and from California State University (Long Beach).

### Chauncey Starr Gave Overview

The kickoff speaker for the seminar was Chauncey Starr, vice chairman of the board of the Electric Power Research Institute and a recipient of one of the 1984 SRA Distinguished Contribution Awards. Subsequent speakers were Elizabeth Drake, senior vice president at Arthur D. Little Co. and former dean of Engineering at Northeastern University; Haggai Cohen, deputy chief engineer of the National Aeronautics and Space Administration; Jon Collins, a defense industry consultant; and George Apostolakis, a professor of mechanical, aerospace and nuclear engineering at the University of California, Los Angeles. Apostolakis substituted for Norman C. Rasmussen, Massachusetts Institute of Technology, who was unable to attend.

The luncheon speaker, Julius Goodman, a professor-scientist who emigrated to the United States from Russia approximately three years ago, described the absence of (and need for) a quantitative risk assessment methodology for application to large engineered systems in the Soviet Union.

### Harold Lewis on Panel

Harold Lewis, professor of physics at the University of California, Santa Barbara, and author of the well-known "Lewis Report," joined the speakers for a lively panel discussion at the end of the seminar. During the discussion, Starr emphasized that all industries must recognize the importance of quantitative risk assessment and that risk assessment must be "brought out of the closet."

### Southern California Chapter Promoted

The seminar was offered as the first activity of an SRA chapter currently being formed in southern California. B. John Garrick of Pickard, Lowe and

## MONTHLY D.C. SEMINARS SCHEDULED THROUGH JUNE

Lecturers for the Washington, D.C. monthly seminars sponsored by SRA, the ILSI Risk Science Institute, and the Brookings Institution have been scheduled through the month of June as follows:

**January 13:** James Swenberg, Chemical Industry Institute of Toxicology, "Problems with Currently Used Dosimetry in Risk Assessment."

**February 10:** Kenny Crump, ICF-Clement, "Comparison of Carcinogenic Relationships of Various Chemicals in Animals and Humans."

**March 10:** Lester Lave, Carnegie-Mellon University, and Gilbert Omenn, University of Washington, "Scientific and Cost Effectiveness Criteria for Short-Term Tests of Chemicals."

**April 21:** Fred Mosteller, Harvard University, "Assigned Shares in Compensation for Radiation-Related Cancers."

**May 5:** Robert Harris and Joe Highland, Environ Corporation, "The Qualitative and Quantitative Risks of Incinerating Hazardous Wastes."

**June 2:** John Bailar, Harvard University and Office of the Department of Health and Human Services, "Empirical Studies of Carcinogen Dose Response Relationships."

Organizers of the seminars are Lave and M. Granger Morgan of Carnegie-Mellon University and Catherine L. St. Hilaire of the ILSI Risk Science Institute. The seminars are held at 4 PM at the Brookings Institution, and persons wishing to attend one are asked to call the ILSI Risk Science Institute at Phone 202-659-3306, preferably a week in advance of the seminar.

Garrick, Inc., and Ray Boykin, California State University, organized the seminar and will be hosting the organizing meeting of the Southern California Chapter at the offices of Pickard, Lowe and Garrick in Newport Beach in February. Chapter bylaws will be established at the meeting. Anyone wishing to attend the meeting should contact Brian Fagan, Pickard, Lowe and Garrick, Inc., 2260 University Drive, Newport Beach, CA 92660 (Phone 714-650-8000).

**JOURNAL CONTENTS (CONT.)**

The tables of contents of Vol. 6, No. 4 and Vol. 7, No. 1 of the SRA journal *Risk Analysis* are reprinted below. Manuscripts of articles for the journal should be submitted to: Curtis Travis, Editor, *Risk Analysis*, Bldg. 4500S, S204, Oak Ridge National Laboratory, PO Box X, Oak Ridge, TN, 37831. Software reviews should be mailed to: Paul D. Moskowitz, Biomedical and Environmental Assessment Division, Brookhaven National Laboratory, Upton, NY, 11973.

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Ralph L. Keeney D. von Winterfeldt	Improving Risk Communication
Brian N. R. Baird	Tolerance for Environmental Health Risks
Jeryl Mumpower	An Analysis of the De Minimis Strategy for Risk Management
Ali Mosleh George Apostolakis	The Assessment of Probability Distributions from Expert Opinions with an Application to Seismic Fragility Curves
Joan K. Plastiras	Intersystem Common Cause Analysis of a Diesel Generator Failure
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Robin Killman	On Recent Books

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Steve Rayner Robin Cantor	How Fair Is Safe Enough? The Cultural Approach to Societal Technology Choice
Adrian R. Tiemann	Risk, Technology and Society ( <i>Comment on Rayner-Cantor Article</i> )
Stan Kaplan James C. Lin	An Improved Condensation Procedure in Discrete Probability Distribution Calculations
Ronald L. Iman	A Matrix-Based Approach to Uncertainty and Sensitivity Analysis for Fault Trees
Harry F. Martz Mark E. Johnson	Risk Analysis of Terrorist Attacks
Leonard Evans	Estimating Fatality Reductions from Increased Safety Belt Use
Frederic B. Siskind	The Cost of Compensating Asbestos Victims Under the Occupational Disease Compensation Act of 1983
Louis A. Cox, Jr.	Statistical Issues in the Estimation of Assigned Shares for Carcinogenesis Liability
Fritz A. Seiler Bobby R. Scott	Mixtures of Toxic Agents and Attributable Risk Calculations
Philip E. Enterline	A Method for Estimating Lifetime Cancer Risks from Limited Epidemiologic Data
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Todd W. Thorslund Charles C. Brown Gail Charnley	Biologically Motivated Cancer Risk Models
<i>SOFTWARE REVIEW</i>	
Y. Lukic B.O.Y. Lydell	NUS Safety/Reliability Workstation
<i>BOOK REVIEW</i>	
Robin Killman	

**NOTE:** *Risk newsletter* is published quarterly, in March, June, September, and December. All contributions to the newsletter should be received by the editor by the first day of the month of publication. Contributions submitted to Publications Chairman Lester Lave should be received by him by the middle of the preceding month.

## CALENDAR OF EVENTS

- January 12–14, 1987. SYMPOSIUM ON ROLE OF BIOMARKERS IN REPRODUCTIVE AND DEVELOPMENTAL TOXICOLOGY, Auditorium, National Academy of Sciences, Washington, DC. Sponsored by NAC, U.S. Environmental Protection Agency, and National Institute of Environmental Health Sciences. General concepts of biomarkers in reproductive and developmental toxicology will be discussed, with emphasis on male and female reproductive toxicology, developmental neurotoxicology and exposure during pregnancy. Attendance will be limited. For registration and poster information, contact: NAS, Committee on Reproductive and Developmental Toxicology (JH 653), 2101 Constitution Ave., Washington, DC 20418.
- January 13, 1987. DC SEMINAR. (See story.)
- January 22, 1987. SYMPOSIUM ON SETTING AIR TOXICS STANDARDS, Hobby Hilton Hotel, Houston, Texas. (See story in this newsletter.)
- February 3–5, 1987. INTERNATIONAL SYMPOSIUM ON PREVENTING MAJOR CHEMICAL ACCIDENTS, Omni Shoreham Hotel, Washington, DC. Sponsored by Center for Chemical Process Safety of the American Institute of Chemical Engineers, U.S. Environmental Protection Agency, and the World Bank. To cover hazard identification, storage and transfer, reactive chemical hazards, process considerations, post-release mitigation, human factors. Fee: \$350. Contact: Don Nowak, AIChE, 345 E. 47th St., New York, NY 10017 (Phone 212-705-7320).
- February 5–6, 1987. MEDICAL SEMINAR ON MANAGING THE RISKS OF CLINICAL PRACTICE, Don CeSar Beach Resort, St. Petersburg Beach, Florida. Sponsored by American College of Legal Medicine and the College of Medicine of the University of South Florida. To cover clinical practice, regulated practice, and hospital staff practice. Fees before January 15: \$250, physicians; \$125 nurses and residents. Contact: Center for Medical Education, Box 65, 12901 N. 30th St., Un. of South Florida, Tampa, FL 33612-9986; or American College of Legal Medicine (Phone 215-646-6800).
- February 10, 1987. DC SEMINAR. (See story.)
- February 15, 1987. SESSION ON INDUSTRIAL DISASTERS AND EMERGENCY MANAGEMENT: PRESENT AND FUTURE, Hyatt Regency Hotel, Chicago, Illinois. Held as part of Annual Meeting of American Association for the Advancement of Science, February 14–19. Will explore state of the art in prevention, control, and mitigation of industrial disasters, focusing on the chemical and nuclear exemplars. Presider and co-organizer: Branden B. Johnson, STS Program, Michigan Technological University, Houghton, MI 49931 (Phone 906-487-2116/2113).
- March 10, 1987. DC SEMINAR. (See story.)
- March 25–27, 1987. COURSE ON RECOGNITION OF ACCIDENT POTENTIAL IN THE WORK PLACE DUE TO HUMAN FACTORS, University of Southern California, Los Angeles, CA. (See September newsletter.) Contact: Phone 213-743-6523.
- April 6–8, 1987. SECOND ANNUAL SRA COURSE ON CARCINOGEN RISK ASSESSMENT, Washington, DC. (See story in this newsletter.)
- April 21, 1987. DC SEMINAR. (See story.)
- April 22–24, 1987. TOPICAL MEETING ON THEORY AND PRACTICES IN RADIATION PROTECTION AND SHIELDING, Knoxville, TN. (See September newsletter.) Contact: Phone 615-574-6196.
- May 5, 1987. DC SEMINAR. (See story.)
- May 25–29, 1987. 5th INTERNATIONAL CONFERENCE ON APPLICATIONS OF STATISTICS AND PROBABILITY IN SOIL AND STRUCTURAL ENGINEERING, Vancouver, Canada. Contact: N. C. Lind, Chairman, ICASP5 Conference, Dept. of Civil Engineering, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1.
- June 2, 1987. DC SEMINAR. (See story.)
- June 9–12, 1987. 11th ANNUAL CONFERENCE OF ASSOCIATION OF STATE FLOODPLAIN MANAGERS, Seattle, Washington. (See September newsletter.) Contact: Phone 206-450-67693.
- July 5–9, 1987. 32nd ANNUAL MEETING OF THE HEALTH PHYSICS SOCIETY, Salt Lake City, Utah. Contact: HPS, 1340 Old Chain Bridge Road, Suite 300, McLean, VA, 22101 (Phone 703-790-1745).
- July 7–10, 1987. WORLD CONFERENCE ON CHEMICAL ACCIDENTS, Rome, Italy. (See September newsletter.) Contact: Phone 031-557-2478, Edinburgh, United Kingdom.
- August 24–25, 1987. SEMINAR ON ACCIDENT SEQUENCE MODELING: HUMAN ACTIONS, SYSTEM RESPONSE, INTELLIGENT DECISION AIDS, Munich, F. R. Germany. Sponsored by Commission of the European Communities and the International Association for Structural Mechanics in Reactor Technology. To analyze the key elements of accident sequence modeling in probabilistic safety assessment. Fee: 500 Swiss Francs. Contacts: G. Apostolakis, 5532 Boelter Hall, UCLA, Los Angeles, CA 90024 (Phone 213-825-1300); P. Kafka, Gesellschaft für Reaktorsicherheit (GRS) mbH, 8046 Garching, Germany (Phone 089-32004175); G. Mancini, Systems Engineering and Reliability Division, JRC Ispra, 21020 Ispra, Italy (Phone 332-789-714).
- August 30–September 4, 1987. INTERNATIONAL TOPICAL MEETING ON PROBABILISTIC SAFETY ASSESSMENT AND RISK MANAGEMENT, Swiss Federal Institute of Technology, Zurich Switzerland. (See story in June newsletter.) SRA contact: Chris Whipple (Phone 415-855-2443). European contact: PSA '87 Meeting Secretariat, ENS-Secretariat, Monbijoustrasse 5, PO Box 2613, CH-3001 Berne, Switzerland; Telephone (+4131)216111; Telex 912110 (atag ch); Telecopier (+4131)229203.
- September 15–18, 1987. TOPICAL MEETING ON POPULATION EXPOSURES FROM THE NUCLEAR FUEL CYCLE, Oak Ridge, Tennessee. (See September newsletter.) Contact: Phone 615-576-2100.

## DEATH OF HOLLAENDER, SRA AWARD WINNER, ANNOUNCED

Alexander Hollaender, winner of SRA's 1985 Distinguished Contribution Award, died in Washington, D.C. on December 6 at the age of 88. Spending 20 years as director of the Biology Division at Oak Ridge National Laboratory in Oak Ridge, Tennessee, Hollaender became known as the father of radiation biology. While directing a division of 400 people, he presided over work that resulted in the discoveries of messenger RNA in cells and the ability of DNA to repair itself.

Retiring from ORNL in 1966, he helped found the Council for Research Planning in Washington, a nonprofit education planning group that organizes scientific symposia worldwide and publishes their proceedings. He continued serving as senior research adviser for the Council until his death. According to his secretary, he had "a full calendar of activities through 1988."

Throughout his career, Hollaender received many honors, including the Enrico Fermi Award from the U.S. Department of Energy in 1983. His most recent recognition was on November 18 when the ORNL Biology Division dedicated its large conference room as the Alexander Hollaender Auditorium. The ceremony was carried via telephone hookup to Hollaender, his wife, and his secretary in his Washington apartment.

## AIR TOXICS SYMPOSIUM HAS FULL PROGRAM

A full program has been scheduled for the Lone Star Chapter's symposium on "Setting Air Toxics Standards," which is to be held January 22 at the Hobby Hilton Hotel in Houston, Texas (see September issue of newsletter). Persons wishing additional information on the program should contact Frank Weir (Phone 713-792-4322).

## CALENDAR OF EVENTS

(cont. from page 14)

—October 26–30, 1987. SECOND U.S.–JAPAN WORKSHOP ON RISK ASSESSMENT/RISK MANAGEMENT, Osaka, Japan. (See September newsletter.) Contacts: Kazuhiko Kawamura, PO Box 6188, Station B, Vanderbilt University, Nashville, TN 37235 (Phone 615-322-2735); Paul Finger Lynes, Craig-Lynes Chemical Management (Phone 615-383-8490).

—1987 ANNUAL MEETING OF THE SOCIETY FOR RISK ANALYSIS, Wyndham Hotel, Houston, Texas. (See story in this newsletter.)

## CALL FOR NOMINATIONS OF SRA OFFICERS

The SRA Committee on Nominations solicits suggestions for nominees for the following positions in the society's 1987 elections:

President-Elect  
Secretary (two-year term)  
Treasurer (two-year term)  
Three Councilors (three-year terms)

Please send the names of your suggested candidates and a brief paragraph supporting each by January 15 to:

Elizabeth Anderson  
ICF/Clement  
1850 K Street NW, Suite 450  
Washington, DC 20006

## WPI ANNOUNCES FELLOWSHIP IN FIRE PROTECTION ENGINEERING AND RISK ASSESSMENT

Worcester Polytechnic Institute has announced the creation of a graduate fellowship in fire protection engineering and risk assessment for the 1987-88 academic year. The fellowship includes tuition and a 12-month stipend, together worth approximately \$20,000. According to David A. Lucht, director of WPI's Center for Firesafety Studies, the new fellowship is designed for applicants with an expressed interest in pursuing thesis research in the application to fire safety of risk assessment concepts that have proven useful in other disciplines.

Begun in 1978, WPI's graduate degree program in fire protection engineering is the only program of its kind in North America and it provides students with the tools they need to pursue careers in fire safety research and fire protection engineering in business, industry, government and academia.

Applicants for the fellowship should have, or should soon be receiving, a bachelor's degree in engineering or the physical sciences. The deadline for application is March 16, 1987. For more information, write to: David A. Lucht, Center for Firesafety Studies, Worcester Polytechnic Institute, Worcester, MA, 01609.



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Lorraine S. Abbott, *Editor*  
Katie Ingersoll, *Production Assistant*

*Society Officers:*

Paul F. Deisler, Jr., *President*, 1986-87  
Michael Gough, *Secretary*, 1985-87  
Steven M. Swanson, *Treasurer*, 1985-87  
Lester B. Lave, *Past President*, 1985-86

*Members of SRA Council:*

Samuel C. Morris, 1987  
Pieter-Jan Stallen, 1987  
M. Elisabeth Paté-Cornell, 1987  
B. John Garrick, 1988  
Peter Barton Hutt, 1988  
R. Talbot Page, 1988  
D. Warner North, 1989  
Robert G. Tardiff, 1989  
Ola Svenson, 1989

*Society Secretariat:* Richard J. Burk, Jr., *Executive Secretary*, Society for Risk Analysis, 1340 Old Chain Bridge Road, Suite 300, McLean, VA, 22101 (Phone: 703-790-1745).

*Note:* Contributions to the newsletter should be mailed to one of the following addresses:

Lester B. Lave  
SRA Publications Chairman  
GSIA, Carnegie-Mellon University  
Pittsburgh, PA 15213  
(Phone: 412-268-8837)

Lorraine S. Abbott  
Editor, Risk newsletter  
1303 Wilson Road  
Knoxville, TN 37912  
(Phones: 615-482-4640; 615-689-5315 [Res.])

## POSITION SOUGHT

**Risk Assessment Position.** French research scientist on PhD level seeks new position in the field of risk assessment. Background in biochemistry and molecular biology. Preferred base is France, but any offers from European-based groups are welcome. Available June, 1987. Contact: Eva Krug, Massachusetts Institute of Technology, Center for Cancer Research, 77 Mass Ave., Cambridge, MA 02139, USA.

## POSITION AVAILABLE

**Environmental Risk Assessment and Management/Assistant Professor.** The Department of Environmental Sciences and Engineering of the University of North Carolina at Chapel Hill invites applications for this tenure track position to teach and perform research at the graduate level. Applicants should have a PhD with a background in public policy, management, economics, planning, environmental science or a related field. Applications will be accepted until February 1, 1987. A résumé and the names of three references should be sent to Professor Morris A. Shiffman, Department of Environmental Sciences and Engineering, School of Public Health, University of North Carolina, Chapel Hill, NC 27514 (Phone 919-966-3849). The University of North Carolina is an equal opportunity/affirmative action employer. Women and minorities are invited to apply and identify themselves.

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