

RISK *newsletter*

Published by the SOCIETY for RISK ANALYSIS

Volume 14, Number 1

First Quarter 1994

EPA's Risk Analysis Scrutinized

Air Pollution Report Released

A congressionally mandated report that involved several members of the Society for Risk Analysis is expected to impact the risk analysis methods that the U.S. Environmental Protection Agency uses to assess the health risks of air pollution.

Released in January, the review titled "Science and Judgment in Risk Assessment" is the culmination of 27 months of work by the National Research Council's 25-member Committee on Risk Assessment of Hazardous Air Pollutants. In the 1990 Clean Air Act Amendments, Congress mandated the report's publication and directed the EPA to consider the report in revising its risk assessment guidelines.

"This report will play a significant role in reorienting and making more effective risk assessment as it is used at EPA," said D. Warner North, a former SRA president. North was part of a small group that presented the report's findings to senior-level staff at the White House, the U.S. Office of Management and Budget, and the EPA, as well as to congressional staff.

In addition to North, who is with Decision Focus Inc. in Mountain View, California, other SRA members who presented the findings were Adam Finkel of Resources for the Future in Washington, D.C., Roger McClellan of the Chemical Industry Institute of Toxicology in Research Triangle Park, North Carolina, and Joseph Rodricks of the Environ Corp. in Arlington, Virginia.

"The most important thrust of the report was to indicate that risk assessment and management have to be more closely coupled and seen as interacting activities," North said. "It should not be a linear process."

This departs from a common interpretation of the 1983 *Risk Assessment in the Federal Government: Managing the Process*, known as the Red Book, which is that risk assessment is a separate process that should be carried to completion before risk management is undertaken.

"Some hazardous air pollutants are much more important than others, both in terms of health risks and potential regulatory costs. Risk assessment efforts and supporting research should be tailored to the level of detail needed for the risk management decisions," North said.

Ten SRA members contributed to the report: North, Finkel, Rodricks, McClellan, John C. Bailar III of McGill University in Canada, Kenneth T. Bogen of Lawrence Livermore National Laboratory in California, Arthur Upton of New York University, and National Research Council staff Richard D. Thomas, Gail Charnley, and Deborah D. Stine.

Committee Vice-chair Upton said Congress mandated the report in recognition of EPA's need for the best scientific advice available. "Under the Clean Air Act, trillions of dollars are at stake," he said. "Because of that, EPA needs to evaluate its risk assessment procedures."

Among the report's 70 recommendations to EPA were several major improvements:

(Continued on page 28.)



**President-Elect
Elisabeth Paté-Cornell**

SRA Elects New Leaders

Improving the exchange of knowledge between different disciplines in the Society for Risk Analysis is the top priority of President-elect Elisabeth Paté-Cornell. Paté-Cornell's election was announced at the 1993 SRA Annual Meeting, along with that of Secretary W. Gary Flamm, Councilor Caron Chess, Councilor Yacov Y. Haimes, and Councilor Tohru Morioka.

Learning from members in other fields is one of the best benefits of being an SRA member, said Paté-Cornell, who is a professor of industrial engineering and engineering management at Stanford University in California.

"This is the only society that brings together members from such diverse fields. They can learn from each other in areas such as uncertainties in risk analysis, where some fields have developed methods more sophisticated than others. We don't want each group to reinvent the wheel."

(Continued on page 2.)

This newsletter is printed on recycled paper.

New Leaders

(Continued from page 1.)

Paté-Cornell has already begun work on her goal as she organizes the 1994 SRA Annual Meeting, which is traditionally the president-elect's biggest task. For the annual meeting she has proposed four new sessions that will bring together people who share an interest in a single topic but are from different backgrounds. The risk-related topics of the sessions include ethical issues, economics, legal aspects, and the treatment of uncertainties in risk analysis.

Paté-Cornell's other goals include increasing research funding from government agencies, promoting the creation of interdisciplinary university programs in risk analysis, increasing SRA's visibility in the nation's capital, and expanding the Society's international scope.

At the international level, she would like to expand the Society's membership into Africa. Currently, SRA has no members on the continent.

"I am very concerned about what is going on in Africa. The environmental issues there are vital," said Paté-Cornell, who was born in Senegal. "Members of SRA's European sector may be able to help us identify risk professionals in Africa."

The president-elect said that other top goals are to attract more engineers to the Society and to avoid inadvertent competition between the PSAM (Probabilistic Safety Assessment Management) conference and the SRA annual meeting for engineers' attendance.

"I am really going to roll up my sleeves about the engineers," she said. "I plan to meet with PSAM organizers to see how we can better coordinate it and the SRA annual meeting. I also want to find a way to get more good engineering articles submitted to the journal."

To increase SRA's visibility among federal agencies in Washington, D.C., she plans to personally invite people from different agencies to the annual meeting.

Paté-Cornell, who has a Ph.D. in engineering-economic systems from Stanford and an engineering degree from the Institut Polytechnique de Grenoble, France, specializes in risk analysis, engineering reliability, engineering and environmental risk management, engineering economy, and decision analysis. She has been a member of the Society since 1981 and served on the SRA Council in 1984-86. She will serve for one year as president-elect, followed by a second year as president of the Society.

W. Gary Flamm will serve a two-year term as secretary. Flamm is president of Flamm Associates in Reston, Virginia, which is a consulting firm specializing in toxicology and food and drug regulations. Before launching his own company, Flamm worked for 25 years with the U.S. Public Health Service for both the National Institutes of Health and the U.S. Food and Drug Administration.

He is a founding member of SRA and served on the SRA Council in 1987-90.

Councilor **Caron Chess** is the director of Rutgers University's Center for Environmental Communication in New Brunswick, New Jersey. She also serves on the National Academy of Sciences Board on Radioactive Waste Management and co-authored *Improving Dialogue with Communities: A Risk Communication Manual for Government*.



Chess

Before joining Rutgers, Chess coordinated implementation of New Jersey's right-to-know law for the New Jersey Department of Environmental Protection after leading development of the country's first right-to-know law.

Chess served on the 1993 SRA Awards Committee, helped coordinate the 1989 SRA Annual Meeting program, and is active in the Risk Communication Specialty Group. She will serve a three-year term as councilor.

Councilor **Yacov Y. Haimes** is the Lawrence R. Quarles Professor of Systems Engineering and Civil Engineering and is founding director of the Center for Risk Management of Engineering Systems at the University of Virginia located in Charlottesville.

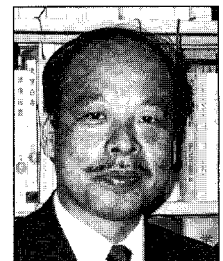


Haimes

Haimes is a former congressional science fellow and has served on the staff of the Executive Office of the President and on the U.S. House of Representatives Science and Technology Committee.

Haimes is both a charter member and a fellow of SRA and is an associate editor of the journal *Risk Analysis*. He will serve a three-year term.

Councilor **Tohru Morioka** replaces Saburo Ikeda as the SRA-Japan representative on the council. He is a full professor of environmental planning and management at Osaka University in Osaka, Japan. He has been a director of SRA-Japan since its inception.



Morioka

Morioka is considered an expert in scientific risk assessment and specializes in environmental risk and technology-induced risk. He has performed risk assessments of toxic chemicals such as pesticides and interpreted perceived risk in an advanced technology society. As a member of a Japan Environmental Agency panel, he has evaluated the toxicity of chemicals.

He has organized several conferences, including the second Japan-U.S. Joint Workshop on Risk Assessment at Osaka in 1987.

Morioka holds a Ph.D. in environmental and sanitary engineering from Kyoto University.

Society Expanded Role in 1993

Business Meeting Examines Growth

At SRA's annual business meeting, outgoing President James D. (Jim) Wilson said that 1993 was a year of growth as the Society for Risk Analysis expanded its scope. The business meeting was held in December as part of the 1993 Annual Meeting in Savannah, which attracted 521 participants.

"1993 was the first time we had undertaken cooperative agreements with the federal government," Wilson said. "It was the first time we had taken any sort of step into something relating to a policy issue."

Government agencies have asked the Society to join in a total of four specific risk-related projects to date.

"Taking on tasks like these represents a significant departure for the Society," Wilson said. "We believe the Society is uniquely capable of doing these efforts because it brings together people with diverse interests and capabilities, something a contractor could not provide nearly as well."

Wilson asked members to comment to the SRA Council both at the meeting and later during the year on whether they support or oppose such ventures. "If this troubles any of you, or, on the opposite side of the coin, if you have a project to suggest, the Council would like to know," he said.

He outlined the projects the Society has undertaken to date:

- The U.S. Environmental Protection Agency signed a cooperative agreement with SRA for help with developing carcinogen risk assessment guidelines.
- The EPA's Office of Health Research asked the Society to organize a residential exposure project, which will result in the first textbook and comprehensive reference document ever published on residential exposure assessment. The EPA is providing \$250,000 in funding. (See story in the fourth quarter 1993 issue of RISK newsletter.)

Membership Approves Vision Statement

After three years of thoughtful debate and numerous drafts, the membership unanimously approved a statement of the vision of the Society for Risk Analysis in December at the business meeting of the 1993 Annual Meeting.

"It is a very broad statement of what the Society wants to be," said former SRA President D. Warner North, who led the effort to craft the statement.

He recognized the work of Paul Deisler, Vlasta Molak, Donald Barnes, David McCallum, and all other SRA councilors, officers, and members who commented on drafts of the statement.

The vision statement reads as follows:

The Society for Risk Analysis is a multidisciplinary, interdisciplinary, scholarly, international society that provides an open forum for all those who are interested in risk analysis. Risk analysis is broadly defined to include risk assessment, risk characterization, risk communication, risk management, and policy relating to risk, in the context of risks of concern to individuals, to public and private sector organizations, and to society at a local, regional, national, or global level.

The Society for Risk Analysis:

- brings together individuals from diverse disciplines and from different countries and provides them opportunities to exchange information, ideas, and methodologies for risk analysis and risk problem-solving;
- fosters understanding and professional collaboration among individuals and organizations for the purpose of contributing to risk analysis and risk problem-solving;
- facilitates the dissemination of knowledge about risk and risk analysis methods and their applications;
- encourages applications of risk analysis methods;
- promotes advancement of the state-of-the-art in research and education on risk analysis; and
- provides services to its members to assist them in developing their careers in risk analysis.

- The California Environmental Protection Agency has asked SRA to help evaluate the risks of pesticide residues, especially in regard to children. This project, which may result in a series of workshops, has not been finalized.

- The EPA and the U.S. Department of Energy have expressed interest in working with SRA on a volume about developing and evaluating distributions in Monte Carlo analyses.

Taking a Stand

Another issue the Society is grappling with is whether it should take a stand regarding risk-related government laws and regulations.

Ann Fisher, the chair of the Ad Hoc Committee on Policy Issues and an outgoing SRA councilor, reported at the business meeting on the committee's examination of possible mechanisms that SRA could use to make public statements on risk analysis matters. The membership will vote on the issue at the 1994 Annual Meeting.

Examples of risk analysis matters on which the Society has been asked to issue a statement include the proposed risk communication act and the section of the Food, Drug, and Cosmetic Act known as the Delaney Clause. The Society's traditional position has been that it does not issue statements in regard of such issues.

(Continued on page 4.)

Society Expanded Role

(Continued from page 3.)

"Now the question before us is whether times have changed sufficiently that we might want to reconsider our position. There are some very important pros as to why we might want to make policy statements," Fisher said. "There are also some cons that would make us want to be cautious regarding how we would have a process to make policy statements."

Fisher asked that members read her report on pages 10 and 11 of the 1993 fourth quarter issue of *RISK newsletter* and send comments by fax at (814) 865-3746, by writing to Ann Fisher, Department of Agricultural Economics and Rural Sociology, Pennsylvania State University, 107 Armsby Building, University Park, PA 16802, or by e-mail at anf1@psuvm.psu.edu.

Restructuring SRA

The SRA Council continues to study ways to restructure the Society to better reflect its growing international membership, said Wilson, who examined the issue as one of his special projects during his presidency.

"One model that we have talked about is forming the International Societies for Risk Analysis that would incorporate national or regional societies from anywhere on the globe," he said. "The SRA Council is not prepared at this point to make any definite recommendations, but discussions are going on across both oceans, and any member who has a suggestion should send it to the Council."

New Leaders

At the meeting, outgoing secretary Vlasta Molak announced the winners of the SRA elections.

Elisabeth Paté-Cornell is the Society's new president-elect, W. Gary Flamm is secretary, and the three new councilors are Caron Chess, Yacov Haimes, and Tohru Morioka.

They succeed Warner North, Vlasta Molak, David McCallum, Ann Fisher, and Saburo Ikeda. (See story on page 1.)

Valedictory: An Epistle to the Society

By James D. Wilson
SRA Past President

For me, it was a very good year. The Society made progress toward its most important goals and took advantage of some unanticipated opportunities to grow in an important new direction.

To all of you who contributed the energy, ideas, and time that made this year successful, my sincere thanks. My particular thanks go to Warner North, Ray Boykin, Vlasta Molak, David McCallum, Ann Fisher, Rae Zimmerman, Cathy St. Hilaire, and Doug Orvis, who gave more than their fair shares.

Finances. Five years ago, the Society was nearly bankrupt. As a result, under Ray Boykin's leadership the SRA Council set us on a course of building the Society's reserves to at least twice our annual expenses to ensure against future financial disaster. I am pleased that during my term we got closer to this goal, although we still have some ways to go.

Worldwide Growth and Organization. All over the world people are coming to recognize the utility of modern risk analysis for solving health, safety, and environmental problems, and interest in our Society has grown as a consequence. Interest in SRA is growing at a rapid pace in areas such as Eastern Europe, Russia, Japan, and Canada, as well as Western Europe.

For some time it has been apparent that this growth must mean changes in the Society's structure. The form appropriate to a North American organization may not suit all other cultures; we need an international organization flexible enough to allow all to meet their own needs. We also need a means for people to affiliate with SRA that allows those in developing economies to reap benefits from membership at an affordable price. As we continue to work toward solving these problems, I am pleased to continue leading the effort as President Bob Tardiff has asked. My goal remains to have at least a conceptual proposal for your consideration at the 1994 SRA Annual Meeting in Baltimore.

The Challenge of Professionalization. An increasing fraction of the Society's membership consists of professionals who make their living from risk analysis. There may arise some tension between serving the needs of the newer professionals and those of members who see the Society primarily as a means to interdisciplinary communication. I am confident that we can continue to

(Continued on page 25.)



SRA Past President James D. Wilson (right) with 1994 President Robert G. Tardiff

International Activities

As part of its ongoing efforts to promote risk analysis in developing countries, the Society sponsored Vitaly Eremenko of Russia as a guest at the annual meeting. Eremenko, who is director and professor at the International Centre of Educational Systems in Moscow, has formed 10 SRA chapters in Russia.

At the 1994 Annual Meeting, the Society hopes to bring several guests from developing countries, said Molak, who was the SRA International Coordinator in 1993.

"This year we only had enough resources to bring one guest from Eastern Europe," she said. "If you feel that the Society should expand into Eastern Europe," she said. (Continued on page 5.)

Europe and developing countries in other areas, then send a financial donation specifically designated for that purpose to SRA."

Individual members, SRA chapters, and government and private organizations could all consider contributing, she said.

SRA's Finances

In 1993, SRA ended the year with a budget surplus of approximately \$15,900 that will be added to the Society's reserves, Treasurer Ray Boykin reported at the business meeting. The 1994 proposed budget is expected to end the year with a surplus of \$28,800.

This brought the Society's reserves to a total of approximately \$140,000 at the end of 1993. By year-end 1994, SRA plans to have close to \$200,000 in reserves.

"Our target is to have at least one-and-a-half to two times our annual expenditures in reserves by the year 2000 to protect us from economic downturn," Boykin said.

"Things are moving forward so that hopefully by the year 2000 we will have reserves that will be appropriate for a society of our level and can start funding some additional educational activities," Boykin said.

In 1993, the Society's revenues totaled \$319,000 and expenses totaled \$299,000, according to Boykin.

(Continued on page 6.)



Deborah Amaral, Annie Jarabek, and Bob Hetes spearheaded the task of organizing 275 abstracts, 10 symposia, and roundtables for the 1993 SRA Annual Meeting.

Is Risk Assessment a Science?

Risk assessment is not a science but instead a professional activity built on a strong scientific base, argued two presenters during a session at the 1993 SRA Annual Meeting.

During the session on philosophical considerations, Michael Gough of the U.S. Office of Technology Assessment in Washington, D.C., and outgoing SRA President James D. (Jim) Wilson presented a paper titled "If Risk Assessment Ain't a Science, What Is It?"

"We suggest that risk analysis is not science. It is a professional activity built on a strong scientific base with roots in the professions of public health, medicine, and engineering. Risk analysis is sometimes performed to form policy decisions but always done in support of some decision," Gough said at the session.

Gough and Wilson defined science by three characteristics: its deliberations are public, its conclusions are inferential and testable, and tests of its inferential hypothesis lead to a rapid identification of those ideas that agree to a test of reality.

"The ability to be falsified is a key element in the scientific process," Gough said. "It is the key criterion to distinguish the scientific from non-scientific statements and predictions about the world."

The second major criterion is that science can make statements only about the material world, Gough said. "We suggest that simple inspection reveals that the products of risk analysis do not meet the criteria of testability and possible false behavior. Consider what these products are. Predictions of the likelihood—quantitative, qualitative—that some loss will occur in the future if some particular decision is made. Risk assessment predictions are the hypotheses of risk assessment."

Risk analysts often have no way of testing their predictions, Gough said. "The vast majority of risk ana-

lysts' products remain in the realm of the unverifiable, the untestable, and the unfalsified. They cannot be scientific."

Gough and Wilson stated that two specific characteristics make risk analyses problematic predictors of reality.

"First, when the decision to be made concerns the setting of some sort of exposures to food tolerance or workplace exposure level, the analyst customarily identifies the level that is considered safe and not the level of expected risk," Gough said. "In reality, the ADI (acceptable daily intake), the RFD (reference dose), and the 10^{-6} dose levels are not estimates of risks. They are tools for legal and policy purposes."

The second undermining characteristic they described is that risk analysts don't have to know accurate levels of certain inputs for a reliable decision guide to be developed.

Risk analysis can be classified as a professional activity, rather than as a science, because of the characteristics it shares with common professions such as medicine, law, architecture, and engineering, Gough stated. "One such characteristic is training. No one expects a fresh graduate of a risk analysis program to be able properly to analyze anything but the simplest scenario.

"Another characteristic that risk analysis shares with these professions is a focus on particular problems. Science, by contrast, may work from a particular, but it works for a general solution. As risk analysts we are asked to compare the possible consequence of building the manufacturing facility on one site or another or to recommend an exposure standard for a particular substance in food."

While Gough and Wilson argued that risk analysis is not a science, they emphasized that it is strongly based on scientific disciplines, especially those that provide the foundations for public health.

Sessions on Ethics, Economics Added to 1994 SRA Annual Meeting

This year the Society for Risk Analysis is adding sessions on ethical issues, economics, legal aspects, and the treatment of uncertainties to its annual meeting. The theme is "Risk Analysis: Learning Across Fields of Application."

"I think that this formula could make the meeting much more interesting and serve better the original purpose of the Society," said President-elect Elisabeth Paté-Cornell, who is an engineering professor at Stanford University in Stanford, California. As president-elect, Paté-Cornell is in charge of organizing the annual meeting.

The new sessions will run in the afternoons, following the six main tracks of ecological risk assessment, risk communication, engineering systems, exposure assessment, dose response, and risk characterization.

The Society will hold the 1994 SRA Annual Meeting at the Hyatt Regency hotel in Baltimore, Maryland, on December 4-7.

Important dates and deadlines include the following:

Abstract submissions: The deadline for submitting paper abstracts is June 24. For format guidelines, contact the SRA Secretariat at the address given below.

Workshop proposals: The deadline for workshop proposals, which must include both a syllabus and a budget, is

June 24. Send materials to the Conferences & Workshops Committee in care of the SRA Secretariat.

Student awards: The Society will grant competitive awards of \$500 each to two students in each of the six major tracks for the highest quality papers. To receive the special format guidelines for student entries, contact the SRA Secretariat. The deadline for submittal is June 24.

Non-U.S. participants: The Society will help with travel costs for a limited number of individuals outside the United States who would like to attend the annual meeting. To apply, contact the SRA Secretariat.

Symposia proposals: For a symposium, which should address a single topic of major interest through a multi-disciplinary format, the deadline for a proposal is May 31, 1994, and the deadline for an abstract is June 24, 1994. For submission forms, contact the SRA Secretariat.

Acceptance: The Program Committee will notify presenting authors of their acceptance and presentation type, time, and date in September.

Advance programs: The Society will mail preliminary programs, which will include preregistration forms, in the fall and distribute final programs at the annual meeting.

The SRA Secretariat's address is Society for Risk Analysis, 8000 Westpark Dr., Suite 130, McLean, VA 22102, telephone (703) 790-1745, fax (703) 790-9063.

Society Expanded Role

(Continued from page 5.)

The breakdown of revenues are as follows: \$120,000 from dues and subscriptions, \$100,000 from the annual meeting, \$51,000 from journal royalty fees, \$20,000 from workshops and seminars, \$15,000 from contributions, \$8,000 miscellaneous, and \$5,000 in interest.

Expenses were \$89,000 for operating costs, \$77,000 for the annual meeting, \$64,000 for the journal, \$44,000 for the newsletter, \$10,000 for workshops and seminars, \$10,000 for council and officer expenditures, and \$5,000 for chapter and committee expenditures.

Journal Growing

The editor of the Society's journal *Risk Analysis* reported that both the quality and the number of article contributions continued to rise in 1993,

when the journal increased its publication from four to six issues annually.

"The number of submissions is rising 10% to 20% a year," said Editor Curtis Travis. "As we grow, we may eventually have nine to 12 issues a year."

As the number of articles has grown, so has the journal's need for reviewers. "We have a problem finding enough reviewers for the articles, and I would welcome any volunteers," he said. (See address on page 11.)

Future Meetings

This year, the Society will hold its annual meeting in Baltimore, Maryland. In 1995, the Society is planning a joint meeting with the Japan Society for Risk Analysis in Honolulu, Hawaii. "We selected Honolulu because that seemed to be the most convenient place to hold a joint meeting with the Japan society," Wilson said.

The 1994 and 1995 meetings will both take place on the first Monday, Tuesday, and Wednesday of December.

Tardiff noted that anyone who would like to suggest ways to improve upon the Society's annual meetings can do so by writing or faxing their suggestion to this year's organizer, Elisabeth Paté-Cornell. (See address on page 9.)

Membership

The Society grew by 55 members in 1993, bringing the total membership to 1,951. "We aren't just growing in the U.S.," Molak said. "We're also growing in developing countries. This doesn't always show on our membership list because many can't afford our full membership fee."

Staff Recognized

Tardiff acknowledged the work of the Secretariat's office, the journal editor and reviewers, and the newsletter staff throughout the year.

Residential Exposure Assessment Projects Under Way Nationwide

by Gary Whitmyre
and Jeffrey Driver

As part of its ongoing residential exposure assessment work, the Society for Risk Analysis held a panel session at the 1993 Annual Meeting on current projects under way by universities, corporations, the government, and trade organizations around the nation.

About 35 SRA members attended the session, which opened with an overview of the Society's own effort to produce a reference book on residential exposure assessment. Scheduled for publication by the end of 1995, the book will serve as a reference guide for professional exposure assessors and as a text for training graduate students in exposure assessment. The management committee of SRA's residential exposure assessment project is mailing a questionnaire to members of both SRA and the International Society of Exposure Analysis in the near future to provide a mechanism for input into the scope and content of this reference book. A related workshop is scheduled in September at the 1994 conference of the International Society of Exposure Analysis in Research Triangle Park, North Carolina.

Several projects by the Chemical Manufacturers Association are underway or being planned, reported Carolyn Leep, the association's staff executive for its Exposure Assessment Task Group. Most recently, the task group published a review of available indoor air exposure models that contains an extensive bibliography on indoor air exposure assessment. The association's

future projects include funding research on indoor source characterization and developing distributions for air exchange rates in residences.

The American Industrial Health Council is finalizing its *Exposure Factors Sourcebook*, according to Linda Triemer of Exxon in East Millstone, New Jersey. The document will provide data from publicly available sources on human physiological parameters and on contact rates with various environmental media such as soil. Slated for publication in spring 1994, the document will also provide guidance for stochastic analysis of exposure.

Two members discussed assessments of exposures via consumer product use. P.J. (Bert) Hakkinen of the Procter & Gamble Company in Cincinnati, Ohio, said that Procter & Gamble has been publishing consumer product exposure assessment work for over 20 years. A current effort involves graduate student intern Lynn St. Clair Harvey whose thesis project will 1) include an overview of current guidance for consumer product exposure assessments, 2) highlight key sources of information, and 3) identify useful software and databases. Laura Fell of S.C. Johnson & Son Inc. in Racine, Wisconsin, reported that one of the firm's efforts is to further refine indoor models, including developing a more accurate representation of the nonuniform distribution of a chemical released from a consumer product in a room. One area of the company's planned research is the potential impact of product applications such as trigger spray and aerosol.

The U.S. Environmental Protection Agency's Office of Research and Development is monitoring residential exposures in its National Human Exposure Assessment pilot study, reported EPA's Chris Saint. The EPA will use the results of the project to validate various exposure models and to provide data to develop new models. In another project, the EPA established a cooperative agreement with the University of Maryland to collect time-activity data via a telephone survey of 10,000 households. The data may be published in electronic form with the *Exposure Factors Handbook* update.

Steve Knott represented the Occupational and Residential Exposure Branch of EPA's Office of Pesticide Programs, providing an update on Subdivision K, which includes guidelines for assessing post-application residential exposures.

From the University of Washington in Seattle, John Kissel reported on his ongoing three-phase EPA-sponsored research of soil contact and soil adherence to skin. Phase I included hand-press studies of the variation of soil adhesion to hands in regard to properties such as moisture content. Phase II is a greenhouse study in which individuals contacted dyed soil. Phase III will address measurements of soil loadings under field conditions.

Gary Whitmyre and Jeffrey Driver of Technology Sciences Group Inc. in Washington, D.C., represent SRA's Exposure Assessment Specialty Group and are involved in the Society's residential exposure assessment project.

Thank You

The Society for Risk Analysis gratefully acknowledges the support of the following sustaining members in 1993:

American Petroleum Institute	PLG Inc.
Amoco Corporation	The Procter & Gamble Company
Chevron Research and Technology Company	Resources for the Future, Center for Risk Management
The Coca-Cola Company	Rohm and Haas Company
The Gillette Company	Sandoz Agro Inc.
Hoffmann-La Roche	Sciences International Inc.

SRA Members Seek More Involvement

At an informal membership session at the 1993 Society for Risk Analysis Annual Meeting, participants brainstormed ways to make it easier for new volunteers to become active.

"The issue we're talking about is how can we get people engaged and how do we get the most out of the Society," said SRA Fellow Catherine St. Hilaire, who led the meeting.

Critics say that SRA members outside a core group are rarely called to participate in committees or run for office. Several meeting participants said that their efforts to volunteer for SRA activities had been ignored repeatedly.

"For the last three years, I have attempted to volunteer, but no one has ever taken me up," said Ruth Thompson of DuPont Environmental Remediation Services in Houston, Texas. "As new people volunteer, they need to be paid attention to. They at least have energy."

"This is not an isolated incident," added Helen Goeden of the Minnesota Pollution Control Agency in Minneapolis, who has also attempted in vain to volunteer for Society activities.

SRA leaders present at the meeting said they are taking steps to correct such problems. "The perception that there is an 'in' group to some extent probably is valid," SRA Councilor Vicki Bier said. "But SRA is making a conscious effort to change."

President Robert Tardiff said many members may not be aware of established procedures, such as drawing talent from a chapter near the site to organize the annual meeting.

The group suggested several specific improvements:

Encourage members to serve on committees. Tardiff arranged the display of committee sign-up sheets for members at large at the annual meeting after participants at the membership session suggested the idea. The names of those who volunteered were subsequently given to the committee chairs, and SRA will ratify the committees in April.

Mail more detailed information about the annual meeting in advance. Some members said they didn't attend the annual meeting reception or the breakfasts because they were unaware of the events. "The information we received prior to arriving on-site was extremely limited," said SRA member Resha Putzrath of Step 5 Corporation in Washington, D.C. Suggestions included advance mailings of detailed programs that include abstracts of presentations and information about social events.

Welcome students to the Society. Suggestions included forming a student chapter, pairing each student with a mentor during the annual meeting, and holding a student reception with invited professionals. "My first SRA meeting last year was difficult," said graduate student Michaela Zint of Michigan State University. "I didn't know any faces, but I knew people's research. Wouldn't it be wonderful if students came here knowing that they were going to meet a mentor?"

Hold a membership session annually. "We are talking with more energy here in this group than we'll get at a typical SRA business meeting. This type of meeting should be part of

the avenue by which the membership can make itself heard," said SRA Councilor Donald Barnes.

Change the elections process. To involve more members in the elections process, nominations could be taken from the floor of the business meeting.

The outpouring of interest in SRA exhibited at the session is promising, said SRA Councilor Ann Fisher. "SRA's membership has grown to nearly 2,000 in 13 years. Those of us who have been somewhat more involved in the power structure stuff are just thrilled to see this interest because we'd like to develop new leadership," she said. "So hang in there. Keep pushing. Let us know what you want."

How to Be Heard

SRA members interested in becoming more active in the Society can use several avenues:

Write a letter to the SRA Council. "Members can write to an officer, councilor, or the Secretariat asking that a specific issue be addressed at the next SRA Council meeting," said President Robert Tardiff. The Council meetings are held twice a year. (See addresses of councilors on facing page.)

Serve on a committee. Any member can serve on a committee at the discretion of the committee chair. To volunteer, members should contact the chair of the committee of interest. (See addresses on page 9.)

Run for office. Members interested in running for a position on the SRA Council or as an officer should contact the Nominations Committee. (See address on page 9.)

Attend the annual business meeting. At the business meeting, held during the annual meeting, members can raise issues from the floor.

Dose Response Specialty Group Suggested

The Society for Risk Analysis is interested in members' views on forming a specialty group for dose response assessment. This specialty group's emphasis would lie in topics such as toxicology, epidemiology, and mechanism of toxic action within the larger framework of human health risk assessment. Please contact Michael Dourson of the U.S. Environmental Protection Agency's Environmental Criteria and Assessment Office in Cincinnati, Ohio, by telephone at (513) 569-7533 or by fax at (513) 569-7916.

Tardiff Appoints 1994 SRA Committee Chairs

SRA President Robert Tardiff has appointed the chairs for 1994 SRA committees:

1994 Annual Meeting: **Elisabeth Paté-Cornell***

Awards: **Curtis C. Travis** (see address on page 11)

Conferences and Workshops: **TBA**
Executive: **Robert Tardiff***

Finance: **Raymond F. Boykin***

Future Structuring of the Society:
James D. Wilson*

Gifts and Grants: **Elizabeth L. Anderson**, Sciences International Inc., King Street Station, 1800 Diagonal Road, Suite 500, Alexandria, VA 22314, telephone (703) 684-0123, fax (703) 684-2223

Government Relations: **Donald G. Barnes***

Meetings: **Elisabeth Paté-Cornell***, chair, and **Robert Hetes**, vice-chair, Research Triangle Institute, Center for Environmental Analysis, P.O. Box 12194, Research Triangle Park, NC 27709-2194, telephone (919) 541-6577, fax (919) 541-5945

Nominating: **D. Warner North** (see address on page 11)

Publications: **James D. Wilson***

Publicity: **Steven Lewis**, Exxon Biomedical Sciences Inc., Mettlers Road, CN 2350, East Millstone, NJ 08875-2350, telephone (908) 873-6063, fax (908) 873-6009

Sections and Chapters: **Rae Zimmerman***

Specialty Groups: **W. Gary Flamm***

*Address is listed in the roster at the right.

In the Next Issue:

Upcoming RISK newsletter articles include:

- Delaney Clause Debated
- SRA Budget Report
- Risk University Programs
- Newsletter Survey Results

1993-94 SRA Officers and Councilors

President: **Robert G. Tardiff**, EA Engineering, Science & Technology Inc., c/o 1423 Trapline Court, Vienna, VA 22182-1731, telephone (703) 893-7475, fax (703) 893-3737

President-elect: **M. Elisabeth Paté-Cornell**, Stanford University, Department of Industrial Engineering and Engineering Management, Stanford, CA 94305, telephone number (415) 723-3823, fax number (415) 725-8799, e-mail ng.mep@forsythe.stanford.edu

Secretary: **W. Gary Flamm**, Flamm Associates, 11760 Indian Ridge Road, Reston, VA 22091, telephone (703) 620-3572, fax (703) 620-1565

Treasurer: **Raymond F. Boykin**, California State University, College of Business, Chico, CA 95929-0011, telephone (916) 898-5895, fax (916) 898-4584

Immediate Past President: **James D. Wilson**, Monsanto Company, 800 N. Lindbergh Boulevard, St. Louis, MO 63167, telephone (314) 694-8879, fax (314) 694-8808, e-mail 4631325@mcimail.com

Councilor, 1994: **Donald G. Barnes**, Science Advisory Board, 1400, U.S. Environmental Protection Agency, Washington, D.C. 20406, telephone (202) 260-4126, fax (202) 260-9232, e-mail barnes.don@epamail.epa.gov

Councilor, 1994: **John D. Graham**, Harvard School of Public Health, Center for Risk Analysis, 677 Huntington Avenue, Boston, MA 02115, telephone (617) 432-4343, fax (617) 432-0190

Councilor, 1994: **Rae Zimmerman**, New York University, Robert F. Wagner Graduate School of Public Service, 4 Washington Square North, New York, NY 10003-6671, telephone (212) 998-7432, fax (212) 995-3890, e-mail zimmmnr@acfcluster.nyu.edu

Councilor, 1995: **Vicki M. Bier**, University of Wisconsin, Department of Engineering, Room 451, 1513 University Avenue, Madison, WI 53706, telephone (608) 262-2064, fax (608) 262-8454, e-mail bier@ic.engr.wisc.edu

Councilor, 1995: **Thomas A. Burke**, Johns Hopkins University, Department of Health, Policy, and Management, Hampton House, Room 551, 624 North Broadway, Baltimore, MD 21205-1995, telephone (410) 955-1604, fax (410) 955-0876, e-mail tburke@jhuhyg.sph.jhu.edu

Councilor, 1995: **Ray Kemp**, Dames & Moore International, 1st Floor, Booth House, 15-17 Church Street, Twickenham, TW1 3NJ, United Kingdom, telephone 44-81-891-6161, fax 44-81-891-4457, telex 929861

Councilor, 1996: **Caron Chess**, Rutgers University, Cook College, Center for Environmental Communication, P.O. Box 231, New Brunswick, NJ 08903-0231, telephone (908) 932-8795, fax (908) 932-7815, e-mail chess_c@aesop.rutgers.edu

Councilor, 1996: **Yacov Y. Haimes**, University of Virginia, Center for Risk Management of Engineering Systems, 103 Albert Small Building, Charlottesville, VA 22903, telephone (804) 924-3803, fax (804) 924-0865, e-mail yyh4F@virginia.edu

Councilor, 1996: **Tohru Morioka**, Osaka University, Department of Environmental Engineering, Suita, Osaka 565, Japan, telephone 81 6 876-5094, fax 81 6 877-8497

Executive Secretary: **Richard J. Burk Jr.**, 8000 Westpark Drive, Suite 130, McLean, VA 22102, telephone (703) 790-1745, fax (703) 790-9063, e-mail burkmgmt@aol.com

Risk Program Focuses on Research Funding Initiatives

The next target date for submitting research proposals to the Decision, Risk, and Management Science program of the National Science Foundation is August 15, 1994. The program supports research that explores fundamental issues in management science, risk analysis, societal and public policy decision making, behavioral decision making and judgment, organizational design, and decision making under uncertainty. In fiscal year 1993 the program spent \$3.4 million to make 165 new and continuing awards and funded 23% of the new proposal submissions.

The program encourages proposal submissions under certain special initiatives. However, in emphasizing these initiatives, it is not trying to exclude any proposals.

"Essentially, the way to think about it is that DRMS tries to maintain a portfolio of awards, and what we're trying to emphasize in our portfolio for fiscal year '95 is the Private Sector Initiative, the policy science area, and risk management in a democratic society," said program director Robin Cantor. "So we want people to understand that we will be emphasizing these areas with our funding. That

doesn't mean that we would then exclude any other kinds of requests; it just means that the portfolio will be shifting in this direction."

The program sponsors the Joint National Science Foundation/Private Sector Research Opportunities Initiative, which matches foundation and industrial contributions to academic research proposals in the topic areas of operational control, management systems, the interface between risk perceptions and trust, and strategic planning. The purpose of the initiative is to encourage academicians to do basic research firmly grounded in real, operational contexts.

The program also participates in the foundation-wide initiative supporting research in the Human Dimensions and Economics of Global Change, which encourages the study of interactions between humans and their environments. A special new emphasis of this initiative is policy science.

Within the policy science area the Decision, Risk, and Management Science program highlights research in risk management under different social regimes and institutions, particularly re-

search that furthers the understanding of risk management in open, democratic societies. The program is also interested in research that addresses the implications of democratic processes for societal responses to risk. Proposals should be well-grounded in relevant social science theory, should explain how the research will contribute to the enhancement of that theory and deeper understanding of risk management and policy, and should clearly outline and justify the research methods to be used.

Before submitting a formal proposal to the program, investigators should obtain a copy of the NSF Grant Proposal Guide (NSF 94-2), which contains relevant forms and instructions and is available from most university grant offices or the program office. Researchers may also want to obtain the DRMS Program Statement (NSF 91-59) or NSF/Private Sector Research Opportunities Initiative (NSF 92-136). For more information, contact program directors Robin Cantor or Hal Arkes at DRMS Program, NSF, 4201 Wilson Boulevard, Arlington, VA 22230, telephone (703) 306-1757, fax (703) 306-0486, e-mail (Cantor) rcantor@nsf.gov, e-mail (Arkes) harkes@nsf.gov.

Xenobiotics Meeting Includes Risk Assessment Symposium

"Bioactivation Mechanisms and Risk Assessment" is one of 11 sessions planned for the International Society for the Study of Xenobiotics' Sixth North American Meeting on October 23-27 at the Continuing Education Center of North Carolina State University in Raleigh.

Xenobiotics refers to substances foreign to the metabolic network of an organism. Howard S. Mason coined the term from the Greek *xenos* and *bios* meaning, respectively, "stranger" and "life," in 1965.

Mason, who is professor emeritus in biochemistry and molecular biology at Oregon Health Sciences University in Portland, first used the term at a Federation of American Societies for Experimental Biology Symposium, says Ernest Hodgson of the Department of Toxicology at North Carolina State University, who was present at that symposium.

"He (Mason) didn't want to say 'foreign compound,' because that's got other connotations, and so he was looking for a new word to do that," said Hodgson. "And it didn't catch on for a while, and then suddenly everybody started to use it.

Now there is a journal, *Xenobiotica*, ... and that (xenobiotics) is what our society is called now."

The organizers of the xenobiotics conference have issued a call for papers for the symposia and poster discussion sessions covering all aspects of xenobiotics.

The meeting, which will include four half-day short courses, is also hosting the Second Rochester Wurzberg Conference on Frontiers in Molecular Toxicology. Sessions include "Cellular Basis of Toxicity: Organ Selective Toxicity" and "Cellular Basis of Toxicity: Molecular Events in Cytotoxicity."

The deadline for abstracts and early registration at reduced rates is June 15.

For more information contact the Sixth North American International Society for the Study of Xenobiotics Meeting, c/o Department of Toxicology, Box 7633, North Carolina State University, Raleigh, NC 27695, telephone (919) 515-2274, fax (919) 515-7169.

Call for Nominations for SRA Fellows

The SRA Awards Committee invites nominations for the award of **Fellow of the Society for Risk Analysis**. The award, which was established by the SRA Council in 1991, recognizes and honors members who have compiled a professional record marked by significant contributions to one or more of the disciplines served by the Society. Such contribution may be evidenced by one or a combination of the following: (a) recognized, original research, application, or invention; (b) technical, scientific, or policy analysis leadership in an enterprise of significant scope that involves risk analysis in a substantial way; (c) superior teaching or contributions to improve education and to promote the use of risk analysis that are widely recognized by peers and students; or (d) service to or constructive activity within the Society of such a quality, nature, and/or duration as to be a visible contributor to the advancement of the Society. The Awards Committee will weigh the total contributions of each nominee in these four areas in arriving at its recommendations to the SRA Council. Nominees must have been members of SRA for at least five years and must now be members in good standing.

Nominations should be made in writing to the SRA Awards Committee chair, Curtis Travis, or to one of the committee members *by April 30, 1994*:

Ann Fisher

Dept. of Agricultural Economics & Rural Sociology
Pennsylvania State University
107 Armsby Building
University Park, PA 16802
Telephone (814) 865-3143
Fax (814) 865-3746

M. Granger Morgan

Dept. of Engineering & Public Policy
Carnegie-Mellon University
Pittsburgh, PA 15213
Telephone (412) 268-2672
Fax (412) 268-3757

Curtis C. Travis (Chair)

Center for Risk Management
105 Mitchell Road
Oak Ridge, TN 37831-6492
Telephone (615) 574-8209
Fax (615) 574-9887

Chris G. Whipple

ICF/Kaiser Engineers Environmental Group
7th Floor
1800 Harrison Street
Oakland, CA 94612-3430
Telephone (510) 419-5516
Fax (510) 419-5355

Call for Nominations for SRA Officers

The SRA Nominating Committee solicits nominations for the following offices in the Society's 1994 elections:

President-elect
Treasurer
Three Councilors

The treasurer will serve a two-year term and, according to the bylaws, may be elected for a second consecutive term. Treasurer Ray Boykin will complete his second consecutive term this year.

Councilors will serve three-year terms and are not eligible for reelection until one year has elapsed following the completion of their terms. Councilors Donald G. Barnes, John D. Graham, and Rae Zimmerman will complete their terms in 1994.

Please submit your nominations with a brief paragraph supporting each *by April 30* to committee chair D. Warner North:

D. Warner North (Chair)

Decision Focus Inc.
650 Castro Street, Suite 300
Mountain View, CA 94041-2055
Telephone (415) 960-3923
Fax (415) 960-3656.

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 **Outstanding Service Award**, which is awarded to SRA members for extraordinary service to the Society. The other category is the **Distinguished Achievement Award**, which is awarded to any person for extraordinary achievement in science or public policy relating to risk analysis.

Please submit the names of nominees and a brief paragraph supporting each *by April 30, 1994*, to the chairman, Curtis Travis, or a member of the Awards Committee:

Ann Fisher (see address above)

M. Granger Morgan (see address above)

Curtis C. Travis (see address above)

Chris G. Whipple (see address above)

It's Time to Renew SRA Memberships

The SRA Secretariat has mailed the 1994 membership renewal forms to Society members. Please return the form and membership fee to the Secretariat's office by March 31.

International Interest in Annual Meeting Continues

Thirty-five members from outside the United States attended the Society for Risk Analysis' 1993 Annual Meeting in Savannah. A listing of these members is provided here to foster worldwide interaction among risk analysis professionals.

AUSTRIA

Michaela Zint

5654 De Ville Court
East Lansing, MI 48823
Telephone (517) 339-0079

CANADA

Christina Chociolko

Center for Policy Research on Science and
Technology
Simon Fraser University
515 West Hastings Street
Vancouver, BC V6B 5K3
Canada
Telephone (604) 291-5114
E-mail christina_chociolko@sfu.ca
Field: risk management (how science translates into public policy)

Diana Del Bel Belluz

Institute for Risk Research
University of Waterloo
Waterloo, Ontario N2L 3G1
Canada
Telephone (519) 888-4567, ext. 5136
Fax (519) 888-6197
E-mail irr@sail.uwaterloo.ca
Field: risk management, risk analysis, risk communication

Louise Houde

Environmental Health Service
Centre de Toxicologie
2705 Boul Laurier
STE-FOY, PQ GIV 462
Canada

Steve E. Hrudey

Environmental Health Program
13-103 Clinical Sciences Building
University of Alberta
Edmonton, Alberta T6G 2G3
Canada
Telephone (403) 492-6807
Fax (403) 492-0364

Dennis Konasewich

Envirochem Services
310 East Esplanade
North Vancouver, BC V7L 1A4
Canada
Telephone (604) 986-0233
Fax (604) 986-8583
Field: chemical control in wood industry, risk assessment for contaminated sites

Vera Lafferty

Siting Task Force Secretariat
580 Booth Street, 9th Floor
Ottawa, Ontario KIA 0E4
Canada
Telephone (613) 995-3539
Fax (613) 996-6206



Among the 16 Canadians who attended the annual meeting were Joseph Szekely, Dennis Konasewich, Christina Chociolko, John Shortreed, Lori Walker, and Greg Paoli (from left to right). Michaela Zint (far right) is an Austrian student at Michigan State University.

Robert Langevin

Quebec Ministry of Forests
Env. Directorate, 930 Ch. Ste. Foy
Quebec, PQ GIS 4X5, Canada
Telephone (418) 646-9026
Fax (418) 643-5651

Steve McColl

Dept. of Health Studies
University of Waterloo
Waterloo, Ontario N2L 3G1, Canada
Telephone (519) 885-1211
Fax (519) 746-6776

Greg Paoli

Institute for Risk Research
University of Waterloo
Waterloo, Ontario N2L 3G1, Canada
Telephone (519) 888-4567, ext. 5290
Fax (519) 888-6197
E-mail irr@sail.uwaterloo.ca
Field: uncertainty analysis, risks to Canadians, and scientific inference

John Shortreed

Dept. of Civil Engineering
University of Waterloo
Waterloo, Ontario N2L 3G1, Canada
Telephone (519) 885-1211
Fax (519) 888-6197

Tim Sly

Ryerson Polytechnical University
350 Victoria Street
Toronto, Ontario M5B 2K3, Canada
Telephone (416) 207-0283
Field: epidemiology, public health, and risk communication/perception



Ortwin Renn is organizing SRA-Europe's next conference (see page 15).

Joseph Southall

Dept. of Fisheries & Oceans
Inspection Branch
P.O. Box 550
Halifax, NS B3J 2S7
Canada
Telephone (902) 426-7811
Fax (902) 426-5342

Joseph G. Szekely

AECL Research
STN 46
Pinawa, Manitoba R0E 1L0
Canada
Telephone (204) 753-2311, ext. 2462
Fax (204) 753-2455
E-mail szekelyj@wl.aecl.ca

Lori L. Walker

Center for Policy Research on Science and
Technology
Simon Fraser University
515 West Hastings Street
Vancouver, BC V6B 5K3
Canada
E-mail lori_walker@sfu.ca
Field: risk communication

Mike Walker

Health Canada
HPB Room B43,
Environmental Health Center
Ottawa, Ontario KIA 0L2
Canada
Telephone (613) 952-6913
Fax (613) 952-9798

Chris Zeiss

University of Alberta
Edmonton, Alberta TGE 6L4
Canada
Telephone (403) 492-5122
Fax (403) 492-0249

GERMANY**Ortwin Renn**

Center of Technology Assessment
(See page 15.)

ITALY**Marsili Giovanni**

Istituto Superiore di Sanita
Laboratorio di Igiene Ambientale
Viale Regina Elena, 299
00161 Rome, Italy
Telephone 39 6 4990, ext. 878
Fax 39 6 4440064
Field: risk analysis for major industrial acci-
dent

RUSSIA**Vitaly A. Eremenko**

International Centre of Educational Systems
Moscow, Center
Novaja ploschad, 314, entr. 1
Telephone (095) 275 3489
Fax (095) 924 6852 or 882 5809
E-mail: lmi@lmis.kiae.su

THE NETHERLANDS**Jan Gutteling**

Psychology Dept., University of Twente
P.O. Box 217, 7500 AE Enschede
The Netherlands
Telephone (315) 389-3290
Fax (315) 335-6695

Wout Slob

RIVM - National Institute of Public Health
and Environmental Protection
P.O. Box 1, NL 3720 BA Bilthoven
The Netherlands
Telephone (31) 30-743132
Fax (31) 30-252973

Mark P. van Veen

RIVM - National Institute for Public Health
and Environmental Protection
Unit BFT, Postbak 10
P.O. Box 1
NL 3720 BA Bilthoven
The Netherlands
Telephone (31) 30-742053
E-mail bftvee@rivm.nl
Field: consumer product exposure and math-
ematical models

SWEDEN**Sven Erick Alm**

Center for Safety Research
Royal Institute of Technology
S-10044 Stockholm
Sweden
Telephone 46 87906980
Fax 46 8202398
E-mail sea@math.kth.se or sea@math.uu.se
Field: mathematical statistics and technical
systems

Ronald Berg

Unirisk AB
P.O. Box 5401
11484 Stockholm
Sweden
Telephone (46) 86604565
Fax (46) 86617970

Britt-Marie Drottz Sjöberg

Center for Risk Research
Stockholm School of Economics
Box 6501
11383 Stockholm
Sweden
Telephone (46) 87369576
Fax (46) 8307225

Lennart Sjöberg

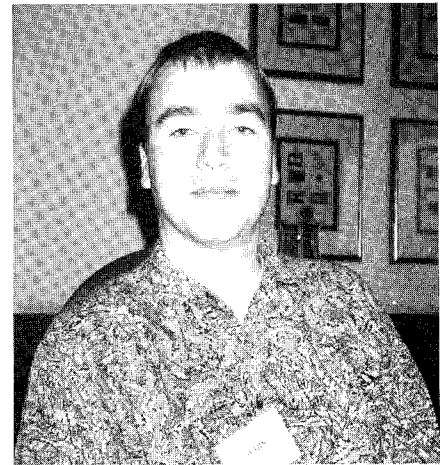
SSE, Box 6501
11383 Stockholm
Sweden
Telephone (46) 8736958
Fax (46) 8307225
Field: risk perception

Torbjörn Thedéen

Center for Safety Research
Department of Mathematics
Royal Institute of Technology
UTH 10044 Stockholm
Sweden
Telephone (46) 8 790 7312
Fax (46) 8 20 2398

SWITZERLAND**Pierre O. Droz**

Institute of Occupational Health Sciences
Lausanne University
Avenue du Tsugnon 19
1005 Lausanne
Switzerland
Telephone (021) 313 21 51
Fax (021) 313 21 20



Mark van Veen is with the National Institute for Public Health and Environmental Protection in The Netherlands.

TAIWAN**Chien-Jen Chen**

Professor and Director
Institute of Public Health
National Taiwan University
No. 1, Jen-Ai Road, 1st Sec.
Taipei 10018
Taiwan, R.O.C.
Telephone 86 23970800, ext. 8359
Fax 86 23511955

How-Ran Guo

Graduate Student
Harvard University

UNITED KINGDOM**Abol Fazl Kazazi**

9 Ringwood Road
Canterbury Ave.
Bradford BD5 9LB
United Kingdom
Telephone (27) 4504691
Fax (27) 4504691

Ray Kemp

(See page 9.)

Ragnar Löfstedt

Centre for Environmental Strategy
University of Surrey
Guildford
Surrey GUL 5XH
United Kingdom
Fax (44) 483-509394

David Tennant

Ministry of Agriculture, Fisheries, and Food
17 Smith Square
London SW1P 3JR
United Kingdom
Telephone (44) 71 238 6216
Fax (44) 71 238 6233
Field: food risk assessment/management

SRA-Europe Holds 4th Conference

Nearly 200 delegates from 22 countries attended the Fourth SRA-Europe Conference in Rome, Italy, in October 1993.

"People in varied domains from social sciences to engineering not only managed to meet but also exchanged and contributed knowledge and information about projects," said SRA-Europe President Marc Poumadère in his closing remarks at the conference.

About 26% of the participants were from Italy, 15% from the United Kingdom, 8% from Russia, and 7% from Switzerland.

Titled "European Technology and Experience in Safety Analysis and Risk Management: 10 Years after the Seveso Directive," the conference featured 16 sessions and six invited speakers, including SRA's 1993 President James D. Wilson. Conference organizers were SRA-Europe Executive Committee members R. A. (Tony) Cox and Paolo Vestrucci, along with Kate Ody and Silvia Prodi.

Executive Committee Plans Journal

by Marc Poumadère
SRA-Europe President

Following is a report of actions taken or considered by the Executive Committee of SRA-Europe during the SRA-Europe Fourth Conference. All members of the Executive Committee were present at its meetings.

European Journal Under Way. Within six months, a four-member committee will present a proposal on creating a European journal of risk analysis to the Executive Committee. The members of the committee are Philippe Hubert of France, Lennart Sjöberg of Sweden, Detlef Müller of Germany, and Catherine Zwetkoff of Belgium.

Russian Section Approved. The Executive Committee approved the creation of a Russian section. Vitaly Eremenko of Moscow is chair of the organizing committee.

Lecture Exchanges with the U.S. To progress toward a common language in risk analysis, the Executive Committee is studying the possibility of organizing an exchange of lectures between the United States and Europe. Poumadère is the organizer.

SRA-Europe Elections. The Executive Committee designated Müller as president-elect 1993. One candidate for the upcoming elections to the Executive Committee is B. Gul Goktepe, a risk analysis professional in Turkey who is active in her country.

The Secretariat's office in the United States will mail voting material to European members early this year.

The Presidential Troika. After considering a system different from SRA's, the Executive Committee decided to continue with the positions of president-elect, acting president, and past president. SRA 1993 President James D. Wilson commented positively on SRA's experience with this as it provides an overlapping continuity of roles.

The committee is also considering naming the president-elect as the annual conference organizer to provide a hands-on grasp of SRA-Europe affairs.

International Affairs. Wilson presented a proposal for a new structure of the Society in which the United States, Europe, Japan, and other regions would be sections that would name a representative to an international body.

Next Conference in Stuttgart. Ortwin Renn presented well-advanced plans for the Fifth SRA-Europe Conference that will be held in Stuttgart in 1995. The members of the Nominations Committee for the conference's awards are R. A. (Tony) Cox, Pieter-Jan Stallen, and Poumadère.

Future Conference Sites. The Executive Committee is considering two potential sites, Torbjörn in Sweden and the United Kingdom. Pieter-Jan Stallen is in charge of presenting a report on potential sites to the committee.



Mary Douglas (left) with Marc Poumadère

Anthropological Approach to Risk Is Fundamental

by Mary Douglas, Recipient of SRA-Europe's Distinguished Scientific Work Award

I would like to thank the Society for Risk Analysis-Europe for recognizing the anthropological approach to risk. I am particularly sensitive to the importance of your gesture because of the high esteem in which I hold your profession.

Before I go further, I would like to begin by paying tribute to the inventor of the anthropology of risk, Aaron Wildavsky, who died in September. In 1978 he asked me some searching questions about perceptions of danger and pollution in foreign parts, and then he pressed on with one of those fruitful collaborations for which his name is famous, this time between anthropologists and political scientists, and so brought me here today.

It is entirely fitting that your committee decided to hold this meeting here in this holy city. In the Bible, Moses enjoined the priests to teach the people to discern the difference between the holy

(Continued on page 17.)

Surviving the Fourth SRA-Europe Conference

by Kate Ody and Silvia Prodi

When we volunteered to organize the SRA Fourth European Conference in Rome, Italy, we had no inkling of how ill-equipped we were for the task. Our skills as an industrial psychologist and a nuclear engineer did little good in helping us plan and carry out the conference for 140 international speakers and 200 delegates in the Vatican in Rome during October 18-20, 1993. Among other things, we were called upon to serve in impromptu roles varying from slide projector mechanics to coat clerks during the conference's three long, harried days.

The opportunities for risk were evident from the start. In fact, we soon began to believe that the inherent risk was that the event *would* actually materialize as planned.

The event opened with a thoughtful presentation from the invited cultural and group theory expert, Mary Douglas. That was followed by introductory speeches and presentations from authorities who represented public sector involvement in risk management and safety cultures.

Steve Cole was the first to fall victim to technological manipulation of humans. The audience viewed the proceedings helplessly as his carefully planned and well-rehearsed presentation developed into a runaway Lumière of Victorian origins. As a result of a faulty timer switch, the delegates were presented with an increasingly rapid succession of pictorial evidence of major crises to the point where the slide show had metamorphosed into an SRA film: Chaos, created by too many Japanese butterflies, was witnessed in fruition on a Roman stage. However, it must be said that Cole's recovery was eloquent and eventual presentation influential.

This, however, was only the beginning.

The influential resident pathogens encountered during the event were not only found in faulty technology, but in safety engineers as well. The obsolete equipment that we found available to us on arrival presented failures that we anticipated. However, the ensuing intervention of highly trained safety engineers was disastrous, to say the least. Scoring full marks for destructive tendencies, our best team managed to reduce an overhead projector to a ball of flames through the coordinated efforts of 12 doctors of engineering. *Quis custodiet custodiet?*

The conference was broken up into four daily sessions, which took part in four locations simultaneously. During this period lists were compiled and recompiled, lost papers were retrieved, belated presentation supports received, and the dispatching of forgotten slides organized.

From noon to 2 p.m. daily, we lost our roles as organizers and rapidly became cloakroom attendants and delegate assistants to approximately 200 individuals. Each delegate eagerly delivered to us a briefcase, coat, folder, or combination of the three. This event was a daily test that required more capacity for memory of critical information, prioritization of tasks, and straightforward physical strength than any scientific consultation ever could.

Next Conference in Germany

Plans are well under way for the next SRA-Europe conference in Stuttgart, Germany, in the spring of 1995.

The event, titled "The Role of Risk Analysis in a Global Economy: Repercussions for Risk Management, Insurances, and Public Policy Making," will be SRA-Europe's fifth conference.

Those interested in organizing a session or contributing to the conference, which is set for May 1995 at Stuttgart's State Convention Center, should contact organizer Ortwin Renn (see address below). Renn is currently forming a Scientific Organizing Committee, which will oversee the conference plans and issue a formal invitation and a call for papers in the spring of 1994.

The conference's subject areas include the following:

- the role of professional risk analysis in risk management and policy issues in Central and Eastern Europe,
- the insurance crisis for industrial risks,
- the role of communication and mediation in setting risk management priorities and coping with transnational hazards, and
- new developments in risk assessment methodologies in the fields of health risks, ecotoxicology, and complex risk modeling.

Organizers are structuring the meeting in four parallel sessions on the above themes that will run each day. In addition, round tables within each subject area will convene at the end of each day. The conference will open and close with plenary sessions, and an evening reception will be held on the first day of the conference.

For information, contact Ortwin Renn, Center for Technology Assessment, Nobelstrasse 15, D-70569 Stuttgart, Germany, telephone 49 711 6783 160, fax 49 711 6783 299.

This game was played and won by being able to recognize individuals, and thus their belongings, and as a result welcome them into the SRA organization. To succeed, the winner had to recognize the maximum number of delegates, preferably without hesitation. This principle of success may be found originating in the anthropological theory that the loneliness of exclusion leads to the most unnecessary and detrimental of emotions, that of frustration.

Sometimes we failed at this game of identification, and the resulting frustration was violently displayed to us through personal crusades. The role of Conference Organizer perhaps misled us into thinking we might have had opportunities to involve ourselves in discussions of scientific subjects close to our hearts, but we had, reluctantly, to subjugate our desire for intellectual expression.

(Continued on page 16.)

Surviving Europe's 4th

(Continued from page 15.)

However, we can only say that this frustration was counterbalanced by a new education and the experiencing of an alternative cultural role.

We also enjoyed the company of the SRA Committee at the conference dinner, having the opportunity to indulge in an unforgettable evening of quiet relaxation: Held in a Roman trattoria, our stimulating dinner conversation was accompanied by political speeches from a prominent politician and amateur pop music, the two of which locked in mortal combat for control of the air waves. However, this element was not detrimental to the evening, and only served to strengthen everybody's preconceptions of Rome — those Japanese butterflies again.

On the whole, despite technical difficulties and the intervention of priests, the conference was deemed by us to be a success. The delegates arrived ignorant of each other for the most part, and left with new contacts and new friends. Nearly all of the 140 presentations catered for materialized, and the knowledge of unexpected, high-quality, state-of-the-art developments were transferred from those who researched them to those who may use them with the greatest of success.

It must be recognized that without the efforts of the conference promoters, Tony Cox and Paolo Vestrucci, the event would not have been possible. As organizers we would like to give grateful thanks to our aides and supports — Antonella and Roberta — who attended every session to ensure the effective operation of unpredictable speaker supports. We were also revived on a regular basis by *cherubini* on the second floor who provided refreshment to the masses, supplying us with sustenance such as morning coffee, fresh tea, and breathtaking garlic spaghetti.

It was an experience.

Kate Ody and Silvia Prodi, who have now recovered from organizing SRA-Europe's fourth conference, are industrial safety consultants with Four Elements Ltd. in London, England.

SRA Members Lead U.K. Risk Center

by David J. Ball

The scope of the research projects undertaken at the Centre for Environmental and Risk Management at the University of East Anglia's School of Environmental Sciences has steadily expanded during the past eight years.

Founded in 1986 in Norwich, United Kingdom, the center was created for the purpose of conducting research on topics involving environmental risks that were or could become significant questions of public policy. This initiative proved very timely, as interest in the application of risk management techniques to a wide range of environmental, health, and safety issues has been growing steadily in Britain during the past decade.

Originally named the Environmental Risk Assessment Unit, the center was renamed in 1993 when it merged with another organization. I was appointed director in 1992 following the retirement of L.E.J. Roberts, who is also an SRA member. The center's deputy director is David Brown.

The center draws researchers from a broad range of disciplines such as economics, psychology, medicine, chemistry, physics, biology, genetics, and environmental science, and many have extensive experience beyond the academic world in the public and private sectors. This permits the center to adopt a multidisciplinary approach to environmental and safety policy decision analysis.

Funding for projects comes from a variety of external bodies, including government departments, the private sector, and international agencies such as the European Community. On the more technical side, the center's major studies include a comprehensive investigation of human exposure to PCBs and dioxins from a chemical waste incinerator in South Wales, an

assessment of the effects of sea-level rise on the U.K. coast, a new study of the public and occupational risks of seven U.K. electricity generation options, and an appraisal of methods of assessing the risks associated with the release of genetically modified organisms.

Of equal importance to the center and its customers are studies of the economic, social, and legal aspects of risk. Typical examples of this type of work include identifying factors contributing to the public perception of risks associated with the food supply, researching the impact of risk perception on safety targets for major accidents, and analyzing the effectiveness of consumer safety campaigns.

A further function of the center is as a World Health Organization Center on Environmental Health Risk Assessment and Risk Communication, a designation that the European Office of the World Health Organization granted in 1992. Under these auspices, the center has taken part in a number of European consultations on risk communication with colleagues from member states and is producing a book on risk communication from a largely European perspective with the support of colleagues from Germany, Italy, Hungary, and Canada.

Finally, and not least, the center contributes to classes at the University of East Anglia's School of Environmental Sciences in the form of modules on risk management, environmental impact assessment, and auditing, which are presented at undergraduate and postgraduate levels.

It is expected that demand for these courses will increase as European interest in environmental and risk management continues to expand.

SRA member David J. Ball is director of the Centre for Environmental and Risk Management in Norwich, United Kingdom.

Risk Assessment Making Headway in Philippines

In the Philippines, risk assessment is fast gaining ground, reports Corazon Claudio, who is president of the SRA Philippine Chapter.

"The main constraint is the shortage of risk analysts in the Philippines," Claudio wrote in a report to RISK newsletter.

Among new developments, the nation's Department of Environment and Natural Resources now requires major environmentally critical projects such as coal-fired power plants to conduct risk assessments of proposed facilities. A report on the assessment is reviewed by the department with the help of local consultants. The requirement is part of the department's environmental compliance certification process that all environmentally critical projects must pass through.

Other risk-related developments in the country include the following:

- More than 200 risk professionals from the Philippines, Malaysia, Thailand, and Vietnam attended a recent course on the risk issues arising from medical and hospital waste held in the Philippines. The Philippine chapter of the Society for Risk Analysis and the Technology Environmental and Risk Management Foundation arranged the course, and the Association

of South East Asian Nations Environmental Improvement Project, which is funded by the U.S. Agency for International Development, sponsored it. The guest speaker was David Nelson, the president of Envirosearch International.

In conjunction with the course, the SRA Philippine Chapter is developing a legislative proposal on medical and hospital waste that it plans to submit to the Philippine Congress.

- The Environmental Improvement Project mentioned above is planning to conduct risk assessments to provide a basis for setting priorities for managing hazardous waste in the Philippines. Another project is already applying environmental risk assessment in determining priorities for environmental management throughout the Philippines.

- Claudio has been appointed chair of the National Steering Committee for Sustainable Development of the Philippine Chamber of Commerce and Industry.

For more information, contact Corazon PB. Claudio, Technology, Environmental and Risk Management (TERM) Foundation Inc., P.O. Box 12228, Ortigas Center P.O. 1600, Emerald Avenue, Pasig, Metro Manila, Philippines, telephone (632) 673-2619, fax (632) 693-4079.

Anthropological Approach

(Continued from page 14.)

and the unholy. To neglect their teaching was to court danger.

We live in a secular world, but we still need discernment. The risk analysts are a secular version of the priests of the Bible, a secular priesthood for a secular time. In your work of discerning risks you warn or reassure the people, and like Aaron found the people of Israel, you find the public unreasoning and rebellious. Either they take risks too lightly, or they are unduly afraid and wanting in trust. This is where cultural theory comes in.

Cultural theory stands on the side of the people and explains to the experts why they are stubborn and unbelieving. Although I recognize the relevance of cultural theory, I must confess that I am very surprised at receiving this award. I had no idea that the cultural theorists had very much influence on professional thinking. On the one hand, I am gratified to see that the perception of risk is well represented on your program of talks. Indeed, the so-called human factor cannot be avoided in discussion of risk, nor can credibility, acceptability, risk amplification, or risk concealment. The questions of commu-

nications, of compliance with safety instructions, and of insurance issues all require knowledge about how cultural bias works.

On the other hand, I do not see evidence of the sophistication that cultural theory could bring to the discussion. The assumption of the isolated individual taking risks by communing alone is obviously irrelevant to the case. What fool would take risks without consultation? What community would not lay down standards of reasonable risks? On the matter of physical risks and probabilities of damage, your discussion is highly professional. On the cultural matter of human behavior and perception of risks, I am sure you do not want to talk like a bunch of amateurs. Yet when words such as "culture," "risk culture," and "safety culture" are bandied about, we do not hear any systematic representation of cultural pressures.

It would seem that your professional training requires no familiarity with the idea that a culture is a cluster of mutually compatible attitudes about authority and social relations, gossip, trust, credibility, and the amounts of food and sleep and exercise a human needs. Still less are the variety of moral and politi-

cal ideas taken into account. Yet without a systematic approach to culture, how can you hope to interpret the public's reaction to technology?

It is not as if there were no survey teams working on cultural types. If you are interested in cultural bias, there are at least three centers with data banks relating cultural categories to attitudes to risk. In the University of California's Survey Research Center in Berkeley, Karl Dake is building up experience on cultural attitudes to risk associated with politics and energy policy. In Austria, H. Karmasin at the Institut fur Motivforschung is identifying domestic cultures, which will be important for understanding attitudes to health risks. Likewise, H. Jenkins-Smith in the Sociology Department of the University of New Mexico in Albuquerque is developing a general data set on cultural types. Those pioneers ought to be encouraged, and their work would surely afford a great resource to your profession.

Mary Douglas' seminal work Purity and Danger is considered a classic in social sciences. Born in Italy and trained in England, she has studied the relationship between risk and culture in many locations, including Africa.

SRA Specialty Groups

Exposure Assessment Group Initiates Monte Carlo Project

Twenty-four people attended the fourth annual meeting of the Exposure Assessment Specialty Group at the 1993 Society for Risk Analysis Annual Meeting. The group's 1993 chair, Paul Price of ChemRisk in Portland, Maine, began the session with a brief overview of the history and objectives of the group, which was started at the 1990 SRA Annual Meeting in New Orleans. Robert Fares of Versar Inc., in Springfield, Virginia, who was the secretary/chair-elect in 1993, is chair of the group for 1994. The group appointed Thomas McKone of the Lawrence Livermore National Laboratory in Livermore, California, as secretary/chair-elect for 1994.

Fares summarized the success of the group's participation at the annual meeting in Savannah. In addition to the wealth of individual papers and posters, the group sponsored two workshops, one on Monte Carlo and another on Reference House involving over 100 participants. Price and David Burmaster of Alceon Corporation in Cambridge, Massachusetts, organized and chaired four probabilistic modeling symposia.

Next, P.J. (Bert) Hakkinen of the Procter & Gamble Company in Cincinnati, Ohio, and Gary Whitmyre of Technology Sciences Group Inc., in Washington, D.C., reported on the progress to date of the residential exposure assessment project.

The group discussed ideas of interest for the 1994 SRA Annual Meeting in Baltimore. Because of the overwhelming success of the Monte Carlo workshop and the stochastic modeling symposia, Price suggested creating a case book that would provide a set of high quality case studies involving the application of Monte Carlo to exposure assessments. Other suggestions included a seminar on exposure and risk modeling software and a workshop on exposure assessment for young professionals. The group also suggested the following topics for sessions, papers, or posters:

- EPA exposure guidelines,
- risk and remediation cost benefit,
- interdependence,
- uncertainty vs. variability,
- uncertainty analyses as they apply to pharmacokinetic or dose-response modeling, and
- examples of what *not* to do with Monte Carlo.

One of the group's main projects for 1994 is the Monte Carlo case book. Anyone interested in contributing to the case book should contact **Fares** (address below) or **Paul Price**, ChemRisk, 1685 Congress Street, Portland, ME 04102, telephone (207)-774-0012, fax (207) 774-8263.

Contacts: Anyone interested in the activities of the specialty group may address comments and suggestions to **Robert Fares**, Versar Inc., 6850 Versar Center, Springfield, VA 22151, telephone (703) 642-6863, fax (703) 642-6954; or **Thomas McKone**, the Lawrence Livermore National Laboratory, P.O. Box 808, L-453, the Livermore, CA 94550, tele-

phone (510) 422-7535, fax (510) 423-6785, e-mail mckone1@llnl.gov.

Risk Communication Group Organizing Annual Meeting Sessions

The Risk Communication Specialty Group of the Society for Risk Analysis is now organizing its sessions for the 1994 Annual Meeting in Baltimore. Members are encouraged to submit session topics in addition to the following suggestions:

- forging the link between risk communication theory and practice,
- evaluation of risk communication programs,
- uncertainty and its influence on the public communication process,
- the most effective methods to teach risk communication,
- methods practitioners can use to define their audiences,
- risk communication and underserved communities,
- trust and credibility,
- bridging the gap between health/risk assessment and risk communication,
- risk comparisons,
- conflict/resolution in mediating community concerns,
- current issues in risk communication,
- negotiating with communities,
- innovative forms of communication,
- developing a plan for public meetings, and
- sociology of risk.

Members interested in submitting a paper or suggesting a session topic should contact the chair of the 1994 Risk Communication Sessions Planning Committee, **Virginia Sublet** of the University of Cincinnati, at P.O. Box 8304, Cincinnati, OH 45208, telephone (513) 321-6704, fax (513) 321-6704. Other members of the committee are Lynn Desautels of the U.S. Environmental Protection Agency's Risk Communication Project, Susan L. Santos of the Focus Group in Medford, Massachusetts, and Ragnar Löfstedt, of the Centre for Environmental Strategy at the University of Surrey in the United Kingdom.

Steven Lewis of Exxon Biomedical Sciences Inc. in East Millstone, New Jersey, is also organizing a workshop on successful risk communication programs for the 1994 Annual Meeting.

At the 1993 SRA Annual Meeting, the Risk Communication Specialty Group adopted a statement of purpose and bylaws and elected officers. Richard Rich of Virginia Polytechnic Institute in Blacksburg, Virginia, drafted the statement of purpose:

The Risk Communication Specialty Group has been formed within the Society for Risk Analysis for the purpose of improving the exchange of information about risk. The group will pursue this purpose through efforts to:

1. Promote and facilitate increased contact between individuals interested in risk communication and those interested in technical risk analysis or risk management;

2. Encourage and facilitate collaborative research efforts among risk communication scholars and practitioners and between risk communication scholars and those skilled in technical risk analysis or risk management;

3. Compile a directory of Risk Communication Specialty Group members and their areas of expertise for SRA members and others to draw on in seeking research partners or advice on improving the communication of risk analyses;

4. Organize panels on risk communication research and practice for national and regional meetings of SRA; and

5. Improve the theoretical foundation of risk communication and implement risk communication theories in such a manner that the four previous purposes are promoted.

The members who drafted the group's bylaws are Robert O'Connor of the Pennsylvania State University in University Park; Gordon Hester of EPRI in Palo Alto, California; Caron Chess of Rutgers University in New Brunswick, New Jersey; and Judy Selig of the Calamus Group in Nederland, Colorado. SRA's legal counsel, Peter Hutt of Covington and Burling in Washington, D.C., reviewed the bylaws.

The group's newly elected officers are Chair Ann Fisher of the Pennsylvania State University; Secretary-treasurer Ann Bostrom of the Georgia Institute of Technology in Atlanta; and Executive Committee members Chess, Lynn Luderer Desautels of the U.S. Environmental Protection Agency's Risk Communication Program in Washington, D.C.; Branden Johnson of the New Jersey Department of Environmental Protection and Energy in Trenton, New Jersey; Ortwin Renn of the Center for Technology Assessment in Stuttgart, Germany; and Stephen Selig of the Calamus Group.

Chess and Desautels reported on an EPA-funded study to determine future risk communication research needs. Kandice Salomone of Rutgers University and Jon Klauenberg of Armstrong Laboratory in San Antonio, Texas, agreed to work toward establishing an electronic network for the group and will try to find a solution to overcome the apparent lack of access that government employees have to e-mail.

The group also discussed the need for a risk communication bibliography and database. Klauenberg and Lewis offered to explore who would be potential users of the list and what their needs might be. The group agreed to start by developing a list of key resources. Each member is expected to contribute five key risk communication references. Fisher requests that all members submit their five references to Karen Irons at the SRA Secretariat (see address in the box on page 28).

Risk Communication Specialty Group Contacts: To be placed on the specialty group roster or obtain information, contact **Ann Bostrom** at the School of Public Policy, Georgia Institute of Technology, Atlanta, GA 30332-0345, telephone (404) 894-9629, fax (404) 853-0535, e-mail ab51@hydra.gatech.edu; or **Karen Irons** at the SRA Secretariat. Questions may also be directed to **Ann Fisher**, Penn-

sylvania State University, 107 Armsby Building, University Park, PA 16802, telephone (814) 865-3143, fax (814) 865-3746, e-mail anf1@psuvm.psu.edu.

Ecological Risk Specialty Group Sets Goals

Approximately 15 specialists from diverse backgrounds attended the Ecological Risk Specialty Group meeting at the 1993 SRA Annual Meeting to discuss the group's past accomplishments and to establish goals for 1994. Glenn Suter of Oak Ridge National Laboratory in Oak Ridge, Tennessee, chaired the meeting at the request of Larry Barnhouse, also of Oak Ridge National Laboratory, who has chaired the specialty group since 1991.

The first order of business was to begin the election process for a new chair of the specialty group. Until that process is finalized, Laura Haselow of the Westinghouse Savannah River Company in Aiken, South Carolina, volunteered to be the acting chair. In addition, seven members of the group formed a committee to actively coordinate and carry out the group's goals.

The group discussed the following goals for 1994:

- prepare for the SRA Annual Meeting in Baltimore;
- act as a clearinghouse for ecological risk assessment information, including software, bibliographies, models, etc.;
- identify a liaison between SRA and the Society for Environmental Toxicology and Chemistry (SETAC); and
- increase the participation of ecological risk assessors in local SRA chapters.

The group also decided that it should not be a policy-setting organization but instead should take a position on the technical basis of policies and not on the policies themselves.

The group suggested several topics for the next SRA annual meeting, including:

- food web models, that is, the need for more explicit and realistic models;
- risk management, asking who are the risk managers and what drives their decisions;
- the scope of ecological risk assessments, discussing what level of data quantity and quality are really needed; and
- various drivers for ecological risk assessments. The group reaffirmed the need to focus beyond CERCLA (Comprehensive Environmental Response, Compensation and Liability Act) ecological risk assessments to include other drivers, such as ecological risk assessments for real estate transactions.

Ecological Risk Specialty Group Contact: For more information about the activities of the group, contact **Laura Haselow**, Environmental Restoration Department, Westinghouse Savannah River Company, 1995 South Centennial Avenue, SC 29803, telephone (803) 644-6766, fax (803) 644-6923.

U.S. Chapter News

SRA Chapter Representatives Meet in Savannah

Representatives from 11 of the Society's 14 chapters and the SRA organizer in Russia attended the chapter breakfast meeting at the 1993 SRA Annual Meeting in Savannah. Rae Zimmerman of New York University's Robert F. Wagner Graduate School of Public Service, who is an SRA councilor and chair of the Sections and Chapters Committee, chaired the meeting.

The chapter representatives reported that popular topics at their meetings are concentrated in the ecological and environmental health areas. Zimmerman noted that SRA will continue to attempt to provide speakers for chapter meetings when requested.

The representatives also discussed innovative methods for raising funds, such as obtaining sponsors, and strategies for increasing membership and attendance at meetings, such as linking up with local chapters of other professional societies or with a local university.

Vitaly Eremenko from Russia reported that there are about 10 chapters totaling about 150 persons who are interested in the Society. The participants at the breakfast considered the suggestion of forming sister chapters, linking a Russian chapter with a chapter in the United States.

SRA Chapter Resources: Chapters should continue to contact the SRA Secretariat for assistance with matters pertaining to mailing lists, collecting funds, setting up bank accounts, and contacting potential speakers. Contact Rae Zimmerman with other questions about SRA chapters at fax (212) 995-3890 or telephone (212) 998-7432.

Lone Star Hosts Ecological Meetings

The November 1993 and February 1994 meetings of the Lone Star Chapter focused on the topic "Ecological Risk Assessment: Issues and Approaches." Larry Dziuk from DuPont Environmental Remediation Services was the speaker at both meetings.

In November Dziuk presented a number of issues involved in the evaluation of ecological risk and possible approaches to resolving those issues.

At the February chapter meeting, Dziuk presented a case study of work done at Los Alamos National Laboratory in 1990 when a major Resource Conservation and Recovery Act feasibility investigation/corrective measures study was initiated to address over 2,000 solid waste management units on the 60-square mile facility.

The chapter also elected new officers in February: President Thomas Connor of the University of Texas School of Public Health, Vice-president/Treasurer Stuart Cagen of Shell Oil Company, and Secretary Ruth Thompson of DuPont Environmental Remediation Services. Connor's address is: University of Texas, School of Public Health, P.O. Box 20186, Houston, TX 77225, telephone (713) 792-4300, fax (713) 794-4877.

Metropolitan Plans Spring Meetings

The Metropolitan Chapter (Connecticut - New Jersey - New York) has chosen three topics for meetings in the spring: "Superfund: Problems and Proposed Solutions," "Environmental Equity," and "Multiple Chemical Sensitivities." Chapter members will receive information in the mail as soon as meeting dates and speakers are confirmed.

The chapter also is planning to hold elections by June 1994. The current president is Miriam de Salegui, 345 West End Avenue, 5F, New York, NY 10025, telephone (212) 749-7961, fax (212) 678-6295.

Michigan Elects Officers

The Michigan Chapter has elected three new officers: President Betty Locey of NSF International, Treasurer Margaret Hopkins of Gradient Corporation, and Councilor Rhonda Berger of Dragun Corporation. Continuing in office are Secretary Brad Strohm of General Motors, Councilor John Nelson of Ford Motor Company, and Councilor

Catharine Simon of the Michigan Department of Natural Resources.

President Locey's address is NSF International, 3475 Plymouth Road, Ann Arbor, MI 48105, telephone (313) 769-8930, fax (313) 769-0418.

National Capital Area Elects Officers

The National Capital Area Chapter has announced the results of its 1994 elections as follows: President-elect Rebecca Klemm of Klemm Analysis Group Inc.; Secretary Judith Bellin, a private consultant; and Councilor John Keller, a private consultant. The other officers of the chapter are President Mary Paxton of the American Petroleum Institute, who is also the program chair through the spring of 1994; Treasurer Lee Abramson of the Nuclear Regulatory Commission's Office of Nuclear Regulatory Research; and Councilor Carolyn Fulco of the Institute of Medicine and Councilor Nathaniel Barr of the U.S. Department of Energy.

Paxton's address is American Petroleum Institute, 1220 L Street, N.W., Washington, DC 20005, telephone (202) 682-8338, fax (202) 682-8270.

New England Welcomes Support

GZA GeoEnvironmental Inc. of Newton Upper Falls, Massachusetts, is the latest organizational benefactor to support the New England Chapter. Gregg McBride of Environmental Risk Management at GZA facilitated the sponsorship.

The chapter continued its monthly seminar series with the Boston Risk Assessment Group in January when Peter LaGoy of OHM Corporation spoke on "Establishing Cleanup Goals for the Polycyclic Aromatic Hydrocarbons: Critical Issues." At the February meeting, Elisabeth Drake of the Massachusetts Institute of Technology Energy Laboratory presented "The Global Warming Risk Game: Options for CO₂ Reductions from Fossil Fuel Use," and Charles Menzie of Menzie-Cura & As-

sociates Inc. spoke on "Using Diving in Ecological Risk Assessment: Exploring the World Down Under."

On April 25 the chapter will participate in a panel that is part of the U.S. Environmental Protection Agency Region I's Ninth Annual Risk Assessors Meeting, which is an internal meeting by invitation only.

Region I toxicologist MaryBeth Smuts will chair the panel on "Research Needs in Risk Assessment." SRA panelists Wendy Koch of TRC Environmental Corporation, Alan Eschenroeder of Alanova Incorporated, and Charles Menzie will also speak. The session is scheduled from 6 to 7 p.m. at the Boston Park Plaza Hotel.

The chapter's president is Alan Eschenroeder of Alanova Inc., 75 Todd Pond Road, Lincoln, MA 01773, telephone (617) 259-0886, fax (617) 259-4460.

Ohio Hosts Russian Visitor

In December following the SRA 1993 Annual Meeting, the Ohio Chapter hosted a visit from SRA-Europe Executive Committee member Vitaly Eremenko of the International Centre of Educational Systems in Moscow, Russia, and sponsored discussions with University of Cincinnati scientists and a presentation at the EPA. The chapter hopes to develop international connections through Eremenko's network of Russian scientists interested in using risk assessment.

At the chapter's February meeting, Kim Burke of the law firm Taff, Stettinius, and Hollister spoke on "Practical Applications of and Problems with Risk Assessment."

Jon Reid of the University of Cincinnati Medical Center is now the chapter president. Newly elected chapter officers are President-elect Jeff Fisher of Armstrong Laboratory at Wright-Patterson Air Force Base, Secretary Hallie Serazin of Ebasco Environmental, and Councilor Janusz Byczkowski of ManTech Environmental Technology Inc. Continuing in office are Treasurer Steven Lutkenhoff of EPA, Councilor Michael Dourson of EPA, Councilor Debbie Gray of Metcalf and Eddy, and

Councilor Ronald Marnicio of Ebasco Environmental.

Reid's address is the University of Cincinnati Medical Center, Environmental Health, 3223 Eden Avenue, Cincinnati, OH 45267, telephone (513) 558-1723, fax (513) 558-5062.

Philadelphia Meets Quarterly

The Philadelphia Chapter held elections in July 1993 and elected President-elect Robert Warwick of Roy F. Weston Inc., Secretary/Treasurer Ann Baines of Environmental Resources Management Inc., and Councilor Thomas Ledoux of the New Jersey Department of Environmental Protection and Energy. They joined the following officers on the chapter's board of directors: President Michael Jayjock of Rohm and Haas, Past President Eileen Mahoney of Eileen Mahoney Associates, and Councilor Isadore Rosenthal of the University of Pennsylvania's Risk and Decision Processes Center.

In October the chapter met at the Wharton School of the University of Pennsylvania where Jim Fava of Roy F. Weston Inc. presented the topic "Life-Cycle Assessment: Concept, Development, and Applications."

Lyse Helsing of the EPA Office of Chemical Emergency Preparedness and Prevention spoke at the January meeting on the topic "Reducing the Risk to the Public from Chemical Accidents."

In April the chapter will meet at the University of Pennsylvania Faculty Club and hear speakers Bruce Mulholt from Environmental Resources Management Inc. and Allan Stern from the New Jersey Department of Environmental Protection and Energy. Their topic will be "Risk Assess-

ment and Hazard Evaluation of Lead in the Environment."

Jayjock's address is Rohm and Haas, Toxicology Department, 727 Norristown Road, P.O. Box 904, Spring House, PA 19477-0904 telephone (215) 641-7480, fax (215) 619-1621.

Research Triangle Holds Monthly Meetings

The Research Triangle Chapter met in December 1993 and heard Shelia A. Martin of Research Triangle Institute speak on the topic "The Probability of Adverse Health Effects from Microbial Pathogens: A Judgment Encoding Methodology Applied to FDA's Import Sampling Program."

In January Thomas Wallsten of the Department of Psychology at the University of North Carolina-Chapel Hill gave a presentation on expert opinion analysis titled "Random Error in Probability Judgments: Implications for Combining Expert Assessments."

At the chapter's meeting in February, Paul Mushak of PB Associates in Durham spoke on the topic "The National Academy of Sciences' New Report on Lead Exposure in Human Risk Populations."

The chapter officers for 1994 are President Annie Jarabek of the U.S.

(Continued on page 23.)

U.S. Chapter Contacts

- Columbia-Cascades:** Jim Dukelow, president, (509) 372-4074.
- East Tennessee:** Joe Minarick, president, (615) 481-2117.
- Greater Pittsburgh:** Gregg Claycamp, president-elect, (412) 967-6524.
- Lone Star:** Ruth Thompson, secretary, (713) 586-5661.
- Metropolitan:** Miriam de Salegui, president, (212) 749-7961.
- Michigan:** Betty Locey, president, (313) 769-8930.
- National Capital Area:** Rebecca Klemm, president-elect, (202) 667-5244.
- New England:** Alan Eschenroeder, president, (617) 259-0886.
- Northern California:** Tom McKone, secretary, (510) 422-7535.
- Ohio:** John Reid, president, (513) 588-1723.
- Philadelphia:** Michael Jayjock, president, (215) 641-7480.
- Research Triangle:** Annie Jarabek, president (919) 541-4847.
- Rocky Mountain:** to be announced
- Southern California:** Mardy Kazarians, president, (818) 242-0401.

Risk-Related Happenings

Space Institute Is Testing Electronic Beam In Waste Treatment

The University of Tennessee Space Institute in Tullahoma is testing the effectiveness of an electronic beam in treating hazardous waste. The project began when Zapit Technology Inc. of Santa Clara, California, awarded the institute a \$90,000 contract to build a system to test the technology in the fall of 1993. The company has increased the award to \$250,000 and is expecting to expand the project again with the signing of a government contract.

Zapit uses an electronic beam to destroy volatile organic material, according to the company's chief executive officer Dan Marks. A Zapit news release says that the electronic beam technology can clean up contaminated sites and control air pollution, save the nation billions of dollars, and end the need to transport hazardous waste.

The principal investigator for the project is Brad Winkleman, a research engineer with the space institute. He said that initial testing has begun on low-level concentrations of propane and trichloroethylene, but a report is not yet available.

For more information on the project, contact Guy Materi, acting vice-president of engineering for Zapit Technology and the head of the project, at telephone (615) 723-2035.

Call for Papers on Ecologically Sustainable Organizations

To stimulate discussion across disciplinary boundaries between scholars of management and scholars of ecology and the environment, the publication *Academy of Management Review* is calling for papers to publish in a special topic forum on Ecologically Sustainable Organizations. The deadline for submissions is May 15, 1994.

Recognizing the influence of environmentalism in movements such as sustainable development, design for the environment, industrial ecology networks, manufacturing for the environment, conservation and clean technologies, ecological economics, and environmental law, the *Review* is especially interested in manuscripts that draw out the implications of these ideas for improving the understanding of topics of interest in the field of management, such as organizational strategies and competitive practices, structural arrangements, technology, individual and group behaviors, human resources management, and many others.

The January 1994 issue of the *Review* contains details concerning submission procedures and evaluation criteria. Authors may submit manuscripts to S. E. Jackson, Editor, *Academy of Management Review*, 6 Washington Place, New York University, New York, NY 10003-6634.

Local Government Environmental Professionals Will Meet in Washington

The National Association for Local Government Environmental Professionals will hold its second annual conference on June 1-3, 1994, in Washington, D.C. The conference site will be the Hotel Washington, which is located two blocks from the White House.

There will be two pre-conference workshops on the afternoon of June 1. One will feature an overview of key environmental compliance requirements and liability issues that local governments face. At the other workshop the Center for Municipal Dispute Resolution, which is jointly operated by the City of San Diego and the University of San Diego, will conduct a training session on mediation or "alternative dispute resolution" techniques.

"The Sky Is the Limit: Innovative Environmental Strategies for the '90s" is the theme of the conference, which will highlight innovative techniques and methods that will enhance local environmental management's capacity to use existing resources more effectively. The topics of the program panels are financing; zoning, land use, and environmental planning; media and public relations; enforcement; legislative developments; and information management systems, including how to use the Internet computer network to access the U.S. Environmental Protection Agency's data network. One session will offer the opportunity to participate in a unique interactive forum called a charette, or case study, in which a 12-member multidisciplinary panel will review an association member's options for resolving its community's most pressing environmental priority.

Membership in the association is open to local government personnel with responsibility for environmental compliance and policy, including city managers and attorneys, environmental officers, utility managers, risk managers, and elected officials, although non-members may attend the conference. Conference registration fees at reduced rates are available until April 15. For more information, contact Sandra Garbrecht at the National Association of Local Government Environmental Professionals, 1350 New York Avenue, N.W., Suite 1100, Washington, DC 20005-4798, telephone (202) 638-6254, fax (202) 393-2866.

National Lab to Hold Applied Environmental Assessment Conference

The Health Sciences Research Division of the Oak Ridge National Laboratory is coordinating a conference on applied environmental assessment on October 31 through November 3, 1994, at the Sheraton Plaza Hotel in Orlando, Florida. The conference will cover site characterization and risk assessment and will emphasize applications of new and existing technologies to environmental restoration and pollutant assessment projects.

The technical program will consist of a one-day overview course on environmental assessment followed by three days of comprehensive invited presentations on regulatory guidance, procedures, methods, experience, and needs and directions associated with site characterization and risk assessment.

For more information contact Sue Huckaba at the Oak Ridge National Laboratory, P.O. Box 2008, Building 7509, MS 6383, Oak Ridge, TN 37831-6383, telephone (615) 576-2100.

Earthquake Risk Management Covered by Project

The Earthquake Engineering Research Institute, acting upon the initiative of its chairman Walter Hays, has developed a project titled *Earthquake Basics*. The project involves creating a series of brief pamphlets and slide sets to advance the methods of technology transfer and improve earthquake risk management policies and practices.

Two slide sets and a six-page brief on the topic "liquefaction" are now available from the institute:

Liquefaction-I, Physics of Liquefaction and Examples of Damage includes 20 slides with notes that describe the physics of liquefaction and show examples of damage from 11 selected earthquakes. The fee is \$30 for institute members, \$35 for non-members.

Liquefaction-II, Liquefaction Mitigation - Ground Improvement includes 20 slides with notes which illustrate ways to mitigate damage caused by liquefaction. The fee is \$30 for institute members, \$35 for non-members.

Liquefaction Brief: What It Is and What To Do About It is a six-page brochure, also known as *Earthquake Basics Brief #1*, which will accompany the slides sets.

To purchase the slides or request a complimentary copy of the brochure, contact Earthquake Engineering Research Institute, 499 14th Street, Suite 320, Oakland, CA 94612-1902, telephone (510) 451-0905, fax (510) 451-5411.

Earthquake Engineers Hold Fifth Conference in Chicago

The Earthquake Engineering Research Institute is sponsoring the Fifth National Conference on Earthquake Engineering on July 10-14, 1994, at the downtown Chicago Marriott Hotel in Chicago, Illinois. The theme of the conference is "Earthquake Awareness and Mitigation Across the Nation." This quadrennial conference is expected to bring together from different countries over 800 professionals representing the broad range of disciplines which are committed to reducing the impact of earthquakes on built and natural environments.

In addition to the technical program, the conference will feature an exhibit hall, and the institute is inviting both commercial and nonprofit institutions to participate.

For more information about the conference or to receive the "SNCEE Invitation to Exhibit" brochure, contact the Earthquake Engineering Research Institute is 499 14th Street, Suite 320, Oakland, CA 94612-1902, telephone (510) 451-0905, fax (510) 451-5411.

Call for Nominations: Gray Medal

The International Commission on Radiation Units and Measurements is seeking nominations for the seventh award of its Gray Medal, which recognizes outstanding contributions in the scientific fields of interest to the commission.

To make a nomination for the award, contact the chair of the International Commission on Radiation Units and Measurements, Suite 800, 7910 Woodmont Avenue, Bethesda, MD 20814. The deadline for nominations is May 1, 1994.

Governmental Industrial Hygienists Have Headquarters at New Address

The American Conference of Governmental Industrial Hygienists has relocated its headquarters. The new address is Kemper Woods Center, 1330 Kemper Meadow Drive, Cincinnati, OH 45240, telephone (513) 742-2020, fax (513) 742-3355.

Chapter News

(Continued from page 21.)

Environmental Protection Agency, President-elect David Kramer and Treasurer Kelly Dix, both of the Chemical Industry Institute of Technology, and Councilor Craig Armstrong of Dames and Moore. Jarabek's address is ECAO MD-52, U.S. EPA, Research Triangle Park, NC 27711, telephone (919) 541-4847, fax (919) 541-1818.

Southern California Hosts Chapter Annual Meeting

The Southern California Chapter of SRA is hosting its 1994 Annual Meeting on May 19 at the Institute of Safety and Systems Management at the University of Southern California.

The annual meeting's technical exchange program will consist of two tracks on risk management providing the perspectives of both industry and regulators on human health and environmental risk assessment. The meeting will also include a business meeting and an annual update on the state of the art in risk analysis. For more information, contact chapter President Mardy Kazarians at (818) 242-0401.

Chapter members are also assisting with the second conference on Probabilistic Safety Assessment and Management, called PSAM-II, on March 20-25 in San Diego. The conference features more than 300 papers on technological risk issues.

Calendar of Events

June 1-3. SECOND ANNUAL NATIONAL ASSOCIATION OF LOCAL GOVERNMENT ENVIRONMENTAL PROFESSIONALS CONFERENCE. (See page 22.)

June 27-28. EVALUATING RISKS FOR ALTERNATIVE USES OF MUNICIPAL SOLID WASTE INCINERATOR ASH, Syracuse, New York. Conducted by the College of Environmental Science and Forestry's Institute for Environmental Policy and Planning of the State University of New York and Syracuse University's Maxwell School of Citizenship and Public Affairs. Contact Susan McIntyre, Institute for Environmental Policy and Planning, 107 Marshall Hall, SUNY-ESF, Syracuse, NY 13210, telephone (315) 470-6702, fax (315) 470-6958.

July 10-14. FIFTH U.S. NATIONAL CONFERENCE ON EARTHQUAKE ENGINEERING. (See page 23.)

August 20-26. FRONTIERS OF STATISTICAL ECOLOGY AND ECOLOGICAL STATISTICS, Sixth International Congress of Ecology, Manchester, United Kingdom. For information, contact G.P. Patil, Center for Statistical Ecology and Environmental Statistics, Department of Statistics, Pennsylvania State University, University Park, PA 16802, telephone (814) 865-9442, fax (814) 863-7114, e-mail gpp@psuvm.bitnet.

September 13-17. INTERNATIONAL SYMPOSIUM ON ASSESSING AND MANAGING HEALTH RISKS FROM DRINKING WATER CONTAMINATION: APPROACHES AND APPLICATIONS, Istituto Superiore di Sanita (ISS), Rome, Italy. Organized by the International Association of Hydrological Sciences and ISS. Contact Eric G. Reichard, U.S. Geological Survey, Water Resources Division, 5735 Kearny Villa Road, Suite O, San Diego, CA 92123, e-mail egreich@s101pcasnd.wr.usgs.gov, telephone (619) 637-6834.

September 17-22. THE MOLECULAR EPIDEMIOLOGY OF CANCER, Aghia Pelaghia, Crete, Greece. Co-sponsored by the European Science Foundation and the Euroconferences Programme of the European Union. *Deadline for application: April 21.* For information on this and other conferences, contact Josip Hendekovic, European Science Foundation, 1 quai Lezay-Marnésia, 67080 Strasbourg Cedex, France, telephone (33) 88 76 71 35, fax (33) 88 36 69 87.

September 18-21. JOINT CONFERENCE OF THE INTERNATIONAL SOCIETY FOR ENVIRONMENTAL EPIDEMIOLOGY AND THE INTERNATIONAL SOCIETY FOR EXPOSURE ANALYSIS, Sheraton Imperial Hotel, Research Triangle Park, North Carolina. Register by August 1 to save \$50. Contact Phylliss Woody, Registrar, University of North Carolina School of Public Health, Office of Continuing Education, telephone (919) 966-4032, fax (919) 966-5692.

October 17-20. NINTH ANNUAL CONFERENCE ON CONTAMINATED SOILS, University of Massachusetts at Amherst. For information contact Paul Kostecki, Environmental Health and Sciences, N344 Morrill, University of Massachusetts, Amherst, MA 01003, telephone (413) 545-2934, fax (413) 545-4692.

October 23-27. SIXTH NORTH AMERICAN INTERNATIONAL SOCIETY FOR THE STUDY OF XENOBIOTICS MEETING. (See page 10.)

November 3-5. NATIONAL FOOD PROCESSORS ASSOCIATION 87TH ANNUAL CONVENTION, Los Angeles Biltmore, Westin Bonaventure, Los Angeles, California. Contact Cindy Wallach, NFPA Director of Meetings and Conventions, telephone (202) 639-5923.

December 4-7. SOCIETY FOR RISK ANALYSIS 1994 ANNUAL MEETING, Hyatt Regency, Baltimore, Maryland. (See page 6.)

Risk Courses

May 16-20. ENVIRONMENTAL RADIATION SURVEILLANCE, Harvard School of Public Health, Boston, Massachusetts. A course on environmental radiation and radioactivity measurements and studies. For more information contact Mary McPeak, Harvard School of Public Health, Office of Continuing Education, Department A, 677 Huntington Avenue, Boston, MA 02115-6023, telephone (617) 432-1171, fax (617) 432-1969.

May 17-20. TWELFTH SUMMER INSTITUTE IN RISK MANAGEMENT IN ENVIRONMENTAL HEALTH AND PROTECTION (including QUANTITATIVE RISK ASSESSMENT), Robert F. Wagner Graduate School of Public Service, New York, New York. Environmental health risk management, quantitative risk assessment, and risk communication for chemical wastes. Topics include environmental fate and transport, toxicology, exposure assessment and dose-response estimation; legal, financial, and administrative aspects of risk management; risk perception and communication. Also, applications to hazardous waste management, drinking water, and urban area issues. Tuition for graduate course credit is \$1,660 (plus \$33 fee) or for a non-credit certificate is approximately \$900. Courses are scheduled 9 a.m. to 5 p.m. For more information contact Rae Zimmerman, Course Director, Wagner Graduate School of Public Service, New York University, 4 Washington Square North, New York, NY 10003, telephone (212) 998-7432 or -7430.

July 11-15. THIRD SUMMER INSTITUTE IN ENVIRONMENTAL LAW, Robert F. Wagner School of Public Service, New York, New York. Environmental laws concerning air and water quality, solid and hazardous waste, and toxic torts are covered from the perspective of property transfers, liability, public disclosure, citizens suits, enforcement, the application of health and environmental standards, and other topics. Co-directors are Michael B. Gerrard of Berle, Kass & Case and Rae Zimmerman of Wagner School of Public Service. (See previous entry for tuition, class schedule, address, etc.)

July 11-15. RECENT DEVELOPMENTS IN ENVIRONMENTAL HEALTH RISK ASSESSMENT, University of Limburg, Maastricht, The Netherlands. This course focuses on recent developments and insights concerning applications of environmental health risk modeling, introduces recent case studies of risk assessment in relation to air, soil, drinking water, and food contamination; and provides information about applicability of health risk assessment in environmental policy making. For more information contact Annie Simon, Summer University, Health Sciences and Medicine, telephone (31) 43-881552, fax (31) 43-881552.

July 18-22. SIMULATION MODELS AND RISK ASSESSMENT, University of Limburg, Maastricht, The Netherlands. The course will enable participants to understand model building, including

Risk Courses (Continued from page 24.)

new developments and applications such as standard setting and extrapolation of animal data. The schedule will include morning lectures to develop the concepts listed above and hands-on afternoon sessions to allow participants to implement their own computer simulations based on concepts learned in the morning sessions. (See previous entry for numbers to contact.)

August 15-19. OCCUPATIONAL & ENVIRONMENTAL RADIATION PROTECTION, Harvard School of Public Health, Boston, Massachusetts. Preparatory course for licensure to work with radioactive materials, teaching fundamentals of working safely with ionizing radiation, use of laboratory and field monitoring equipment, federal laws and regulations, procedures for controlling radiation exposures, and information on standards and guidelines from Nuclear Regulatory Commission personnel. For more information contact Mary McPeak (see first course listed above).

Valedictory (Continued from page 4.)

accommodate both. Yet we do need to pay attention to the fact that the potential for conflict exists and that we need to manage it.

Growth and Change. The words "organization" and "organism" have the same Indo-European root. Just as plants and animals either grow or renew themselves or die, organizations such as SRA will die if they don't grow.

SRA has grown in an important new dimension during the past two years. For the first time, the Society is providing government agencies with policy-related information. Warner North's term saw SRA's first venture into organizing such information: we assembled thoughts and information bearing on development of guidelines for carcinogen risk assessment for the U.S. Environmental Protection Agency and the California Environmental Protection Agency.

During 1993, this growth continued. The Society signed a cooperative agreement with the EPA to organize information on conducting residential exposure assessments. We also are creating a volume on how to develop and evaluate distributions, which is sponsored by the U.S. Department of Energy, the U.S. Environmental Protection Agency, and some private sector organizations. And we are working on a proposal to develop some new information bearing on the assessment of risk from pesticide residues.

This kind of work helps the Society attract new members. More importantly, it puts the Society at the center of critical efforts to create a more formal structure for risk analysis.

These projects present us a significant challenge. The resources available to manage them are already stretched beyond endurance. We need to develop additional capabilities. Because this is so important to the future of our discipline, I am confident we can find the means.

I am both honored and pleased to have been able to lead our Society during this interesting and exciting time. Thank you for providing me this opportunity.

Advertisements**Risk Assessment Specialist**

Waste-Tech Services, Inc., (WTS), an integrated environmental services company, is actively recruiting for a Risk Assessment Specialist. WTS provides consulting, remediation, treatment, and disposal services to industry.

The successful candidate (SC) will possess a graduate degree (PhD preferred) in toxicology or a closely related field and a minimum of 8 years experience in risk assessments, preferably with experience in private consulting, primarily in RCRA conducting exposure and base line risk assessments. SC will lead a small team of professionals in the technical areas of risk assessments and clean-up levels. SC should have supervisory experience, be a "people person," and have excellent leadership skills. Excellent written and verbal communication skills, remediation industry experience, and knowledge of RCRA and RFI/CMS, CERCLA, and OSHA regulations are required.

WTS offers a smoke-free workplace, competitive salary, and an outstanding benefits package. Those candidates having all of the above qualifications are encouraged to send their resume and salary history in confidence to: **Waste-Tech Services, Inc., 800 Jefferson County Parkway, Golden, CO 80401, Attn: Human Resources.** No phone calls please. An EEO/AA Employer.

**A SENES Short Course on Human Health and Ecological Risk Assessment**

May 25-27, 1994, Arlington, VA

This intensive course will provide risk analysts and risk managers with fundamental concepts and skills for assessing human health and ecological risks. Participants will learn by using state-of-the-art methods, including sensitivity and uncertainty analysis, to estimate and evaluate risks in example case studies. Instructors are Dr. F. O. Hoffman and Dr. S. M. Bartell, SENES Oak Ridge Inc., Center for Risk Analysis, Oak Ridge, TN 37830. Call Courtyard Marriott-Crystal City (ref. SENES) at (703) 549-3434 for reservations. For more information, telephone or fax (615) 346-7406. The fee is approximately \$950.

Risk Assessment Specialists

Dames & Moore, an environmental-engineering consulting firm with over 100 offices worldwide, is seeking mid- to senior-level Risk Assessment Specialists as part of its firmwide Group. The positions available are in Sacramento, California; Seattle, Washington (ecotoxicologist only); and Philadelphia, Pennsylvania.

Applicants should possess an M.S. or Ph.D. in environmental chemistry or related discipline, proven knowledge of EPA-approved models, and a quantitative approach to risk assessments including hands-on application of Monte Carlo techniques. Facility with computer spreadsheets is a must. Previous experience in a consulting firm is a prerequisite. Some business development is required depending on location. Excellent writing skills are desirable. Ideal candidates will reflect the "Sell, Manage, Do" credo of Dames & Moore.

Please submit resume to Dames & Moore, Attn: Manager, Toxicology, Risk Assessment and Environmental Statistics Group, 8801 Folsom Boulevard, Suite 200, Sacramento, CA 95826. Fax: (916) 387-0802. Candidates only. No recruiters please. EOE. Women and minorities are encouraged to apply.

RISK newsletter Readership Survey Still Under Way

More than 15% of those surveyed at the SRA 1993 Annual Meeting have responded to the RISK newsletter's readership survey. If you haven't yet turned in a survey, please fill out this form (or a photocopy of it) and mail to: RISK newsletter, 7649 Oak Ridge Highway, Knoxville, TN 37931 by **April 30, 1994**. If you would like, please attach a copy of your resume.

Name: _____ Gender: F M

Age: Below 20 21-30 31-40 41-50 51-60 61-70 71-80 Above 80

Job title, work affiliation, and address: _____

Telephone number: _____ Fax: _____ E-mail: _____

Of the following newsletter departments, which do you find helpful?

- | | | |
|--|--|--|
| <input type="checkbox"/> Member news | <input type="checkbox"/> U.S. chapter news | <input type="checkbox"/> Employment advertisements |
| <input type="checkbox"/> Risk-related happenings | <input type="checkbox"/> Risk courses | <input type="checkbox"/> Software advertisements |
| <input type="checkbox"/> Calendar of events | <input type="checkbox"/> Conference advertisements | <input type="checkbox"/> Book advertisements |

Of the following topics, which interest you?

- | | |
|---|--|
| <input type="checkbox"/> Annual meeting news | <input type="checkbox"/> Legislation affecting risk analysis |
| <input type="checkbox"/> Biographies of SRA officers, fellows, and award recipients | <input type="checkbox"/> Profiles of government officials who impact risk analysis |
| <input type="checkbox"/> Special SRA projects | <input type="checkbox"/> U.S. EPA risk-related regulations |
| <input type="checkbox"/> Residential exposure assessment reference book | <input type="checkbox"/> Ecological risk issues |
| <input type="checkbox"/> Workshops | <input type="checkbox"/> Engineering issues |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Exposure assessment issues |
| <input type="checkbox"/> Non-U.S. news | <input type="checkbox"/> Global risk issues |
| <input type="checkbox"/> SRA-Europe | <input type="checkbox"/> Residential exposure issues |
| <input type="checkbox"/> SRA-Japan | <input type="checkbox"/> Risk communication issues |
| <input type="checkbox"/> Other countries (please specify) _____ | <input type="checkbox"/> Graduate student news |

Would you like to receive the newsletter electronically via your computer? yes no

If RISK newsletter launches an electronic bulletin board over the Internet computer network, what would you like to see on the bulletin board? _____

How often do you use a computer in your work?

- Daily Several times a week Several times a month Rarely Never

Do you have access to electronic mail? yes no If so, do you use your electronic mail? yes no

Please indicate below which computer networks or services you can access.

- | | | | | |
|-------------------------------------|---|--|----------------------------------|--------------|
| <input type="checkbox"/> Internet | <input type="checkbox"/> America Online | <input type="checkbox"/> Sprint's PC Pursuit | <input type="checkbox"/> Ziffnet | Other: _____ |
| <input type="checkbox"/> CompuServe | <input type="checkbox"/> Prodigy | <input type="checkbox"/> Genie | <input type="checkbox"/> Delphi | |

Do you have any specific criticisms of the newsletter? How can we improve? _____

Do you have any suggestions for articles that we should cover? _____

Do you have any suggestions regarding electronic publishing or bulletin boards? _____

Member News

SRA Councilor **Vicki M. Bier**, who has a joint appointment in the College of Engineering's departments of industrial engineering and nuclear engineering at the University of Wisconsin in Madison, received the American Nuclear Society's 1993 Women's Achievement Award. The award is given for outstanding personal dedication and achievement by a woman for work she has performed in nuclear science, nuclear engineering, research, or education. Bier specializes in risk analysis of technological hazards, decision analysis, and operations research.

Paul F. Deisler Jr., former SRA president, has a new mailing address: P.O. Box 5819, Austin, Texas 78763-5819, telephone (512) 502-1261.

Former SRA president **B. John Garrick** of PLG Inc. in Newport Beach, California, received a citation of fellow from the American Nuclear Society in 1993. The society awards the citation to those who have advanced the science of nuclear technology.

John Kinzell has a new position as Environmental Health & Safety Manager at Tomen Pacific Agro Co. His new address is 444 Market Street, Suite 160, San Francisco, CA 94111, telephone (415) 954-8410, fax (415) 954-8420.

H. Felix Kroman has retired from risk management consulting to devote more time to his newsletter *Risk Management Reports*, which he now publishes monthly in South Norwalk, Connecticut. Later this year, the newsletter's headquarters will move to Lyme, Connecticut.

Curtis C. Travis, who is the director of Oak Ridge National Laboratory's Center for Risk Analysis and is the editor of *Risk Analysis: An International Journal*, has a new address: Center for Risk Analysis, Oak Ridge National Laboratory, 105 Mitchell Road, Oak Ridge, Tennessee 37831-6492, telephone (615) 574-8209, fax (615) 574-9887.

Readers' Assessments

At the annual meeting in December, several members commented to the newsletter staff that they would like to see a letters to the editor section in the *RISK newsletter*, where members could debate risk issues with one another and comment on newsletter articles.

It is with this in mind that the newsletter is launching a new department in this issue. Please send your letters to Readers' Assessments, *RISK newsletter*, 1303 Wilson Road, Knoxville, TN 37912 or fax them to (615) 691-0229.

Dear Editor,

As a five-year member of SRA, I consider myself a relative newcomer; enough so that I can still ask a naive question . . . *what are we doing?*

A notable observation from Savannah: the engineers weren't there! They are aiming for PSAM II (Probabilistic Safety Assessment & Management Conference II) this year. I just sent in my response to a BELLE (Biological Effects of Low Level Exposures) survey, including responding to their question of whether they should form their own professional society. Others such as the Health Physics Society are starting up a risk assessment section. There is a theme here.

At a time that risk assessment is being embraced by an increasingly diverse array of organizations, that same expanse is not being reflected in the SRA that I've seen at the national meetings and in the journal. Could it be that we need to recruit these allied professions to let them know it's OK to be in SRA? Could it be that we need to structure SRA so that BELLE and PSAM could operate productively therein? If the American Chemical Society can do it and claim to be the largest professional society in the nation, there is a precedent for greater success in SRA.

Also, we need to consider ways to boost the presence of SRA in the professional community. Perhaps the Society should make the following items available:

- a membership pin displaying the SRA logo
- a membership plaque for members to display in their offices
- an SRA banner for chapters, which could serve as backdrop for photographs
- an SRA seal for the front of a podium, which would be seen in photographs
- appreciation gifts bearing the SRA logo for speakers and guests.

— Larry R. Froebe
International Technology Corp.
Irvine, California

Dear Editor,

You mentioned to me the encouraging response that the *RISK newsletter* received in Savannah. Perhaps I can add to that by saying how useful I find it, too. I can honestly say it is one of the few publications I actually look forward to receiving on my desk!

— D. J. Ball
Environmental Risk Assessment Unit
University of East Anglia
United Kingdom



RISK newsletter
is published by
the Society for
Risk Analysis

Lorraine S. Abbott, *Editor*
Amy Charlene Reed, *Associate Editor*
Mary Bryant, *Assistant Editor*
Katie Ingersoll, *Production Manager*

Society Officers:

Robert G. Tardiff, *President*, 1993-94
Elisabeth Paté-Cornell, *President-elect*, 1993-94
W. Gary Flamm, *Secretary*, 1993-1995
Raymond F. Boykin, *Treasurer*, 1991-94
James D. Wilson, *Past President*, 1993-1994

Members of SRA Council:

Donald G. Barnes, 1994
John D. Graham, 1994
Rae Zimmerman, 1994
Vicki M. Bier, 1995
Thomas A. Burke, 1995
Ray Kemp, 1995
Caron Chess, 1996
Yacov Y. Haimes, 1996
Tohru Morioka, 1996

Secretariat: Richard J. Burk Jr., Executive Secretary, Society for Risk Analysis, 8000 Westpark Drive, Suite 130, McLean, VA 22102, telephone (703) 790-1745, fax (703) 790-9063.

Publications Chairman: James D. Wilson, Monsanto Company, 800 N. Lindbergh Blvd., St. Louis, MO 63167, telephone (314) 694-8879, fax (314) 694-8808, e-mail 4631325@mcimail.com.

Note: Contributions to the newsletter should be faxed to (615) 691-0229 or (615) 688-9888 (Res.) or mailed to:

Lorraine S. Abbott
Editor, RISK newsletter
Tec-Com Inc.
1303 Wilson Road
Knoxville, TN 37912
Telephones: (615) 691-0176, (615) 689-5315 (Res.)

Risk Analysis Scrutinized

(Continued from page 1.)

- EPA should develop and use a multilevel — or iterative — approach to risk assessment. The agency should begin by using a relatively inexpensive technique, such as a simple, conservative transport model, to screen out chemicals that do not pose significant health risks. Remaining chemicals would then undergo repeated evaluations to allow for better estimates as new data and improved scientific techniques become available.

- For this iterative approach to work properly, EPA needs to develop clearer principles for its current default assumptions and establish procedures for departing from the default options when appropriate. The agency needs to develop better data to enable risk assessments to be less dependent on conservative default assumptions and more accurate as predictions of human risk.

- When EPA reports estimates of risk to government officials and the public, it should present these estimates not as a single number or percentage but rather in ways that reflect the amount of uncertainty.

- EPA does not have sufficient exposure and toxicity data to establish health risks from all 189 chemicals the government has identified as hazardous air pollutants. EPA should screen these chemicals to identify data gaps, prioritize the data needs, and stimulate research by other organizations.

- Using the technical recommendations outlined in the report, EPA should assess the aggregate effects of exposure to multiple toxic chemicals and account for variability in sensitivity among people because of factors such as age.

Copies of the report are available for \$79 from the National Academy Press, 2101 Constitution Avenue, N.W., Washington, D.C. 20418, telephone (202) 334-3313.

SOCIETY FOR RISK ANALYSIS
8000 Westpark Drive, Suite 130
McLean, VA 22102

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