

Register Online and check out the complete program at [www.sra.org](http://www.sra.org)

Society for Risk Analysis



**2003 Annual Meeting**  
*Bridging Risk Divides*



**Baltimore, Maryland**  
**23rd Annual Meeting**

December 7-10

Renaissance Harborplace Hotel

Baltimore, Maryland

**Draft Preliminary Program &  
Registration Packet**

# Society For Risk Analysis Annual Meeting

## 2003 Preliminary Program and Registration Brochure

### Baltimore, MD

The Society for Risk Analysis is pleased to hold its Annual Meeting at the Renaissance Harborplace Hotel. With world-class facilities and a diverse range of historical and cultural attractions, the Baltimore/Washington area is always a favorite meeting location.

The hotel is accessible from the Baltimore Washington International Airport. Shuttles and taxi services (about \$25) are available. Dulles International Airport is 1 1/2 hours and Reagan National Airport is 45-60 minutes from the hotel. You will need to rent a car, take a shuttle or taxi if you arrive at Dulles or Reagan National airports.

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### Wednesday Round Table Discussions

A variety of round table discussions will be offered this year. They will take place on Wednesday, December 10 from Noon-1:30 pm. Attend the round table of your choice and don't forget to order your lunch on the registration form. The round table choices are as follows:

- WRT1—Roundtable 1: The State of Risk Analysis Education and Training, Are We Meeting the Needs? *Chaired by Wesley Long and Charles Yoe.*
- WRT2—Roundtable 2: Estimating Response at Low Dose. *Chaired by Jim Wilson*
- WRT3—Roundtable 3: Risk Legislation and the Government: What's Hot and What's Not. *Chaired by Jack Fowle*
- WRT4—Roundtable 4: What are Consultants For and How to be One. *Chaired by Joe Rodricks*
- WRT5—Roundtable 5: Writing Winning Proposals. *Chaired by Robert O'Connor*
- WRT6—Roundtable 6: Making Interdisciplinary Collaborations Work. *Chaired by Ann Fisher*

## Meeting Highlights

### SRA Annual Meeting Theme

The theme of this year's meeting is Bridging Risk Divides. The meeting will highlight links among aspects of risk analysis (e.g., risk assessment, risk management, and risk communication); risk sectors (e.g., academia, business, government, and non-profit); risk disciplines (e.g., toxicology, epidemiology, engineering, economics, law, psychology); and "haves" and "have-nots" (e.g. developing and developed world, different demographic groups).

### Poster Sessions

There will be 4 poster sessions this year. P1 is Monday from 3:00-3:30 PM, P2 is Tuesday from 10:00-10:30 AM, P3 is Tuesday from 3:00-3:30 PM and P4 is Wednesday from 10:00-10:30 AM. Refreshments will be provided at each session. See the Schedule at a Glance for the topics covered in each session. Poster presentors will be at their poster during each session for questions and answers

### New this Year!

### Be a Die Hard Risk Analyst for Fun and Profit!

Attend the last session on Wednesday, December 10 (3:30-5:00 PM) and you will be eligible to win a terrific benefit. One attendee will be selected at random from each of the nine sessions and will receive either a refund on 2003 Annual Meeting registration fees or a full credit toward 2004 Annual Meeting fees. This is at least a \$400 value, and is not available in stores!

What are your chances of winning? Get out those mechanical pencils and do the math. Attend a session with 19 others and your risk of winning is  $5 \times 10^{-2}$ ! Attend with just nine others and face a probability of  $1 \times 10^{-1}$ . Are those unreasonable risks, or what?

Make your travel plans now to stay for the entire Annual Meeting, and you may go home a winner!

## 3 Easy Ways to Register



**Register online at [www.sra.org](http://www.sra.org) – Online registration will be available starting September 30**

**Register by fax:** Fax your completed form with credit card information to (703) 790-2672 (**Purchase orders not accepted for workshops**)

### OR BY MAIL:



Mail your completed form with payment to:  
SRA Headquarters  
1313 Dolley Madison Blvd.  
Suite 402  
McLean, VA 22101

*Mail completed registration form with check, purchase order or credit card information. You are considered registered when full payment or purchase order has been received.*



## Registration Information

All cancellations are subject to a \$50 service charge. Cancellations must be in writing to the SRA Secretariat. Cancellation letters received by November 10 will be refunded total registration fees **minus** the \$50 service charge and will be refunded after the meeting. No refunds will be issued on cancellations received after November 10.

**CONFIRMATIONS:** Confirmation letters will be mailed once payment has been received.

### FOR FURTHER INFORMATION:

Please contact SRA Headquarters at:  
1313 Dolley Madison Blvd.  
Suite 402

McLean, VA 22101

(703) 790-1745, FAX: (703) 790-2672

Email: [SRA@BurkInc.com](mailto:SRA@BurkInc.com); Website: [www.sra.org](http://www.sra.org)

<b>MONDAY</b>	7:15-8:00 AM	New Member Breakfast			
	8:00 AM-5:30 PM	Registration			
	8:30-10:00 AM	<i>Plenary Session: Paul Gilman; US EPA</i>			
<b>Events</b>	10:00 AM-4:00 PM	Exhibits Open - Ballroom Foyer			
<b>Sessions</b>	10:30 AM-Noon	<b>MT. WASHINGTON</b>	<b>FELLS POINT</b>	<b>SALON E</b>	<b>SALON D</b>
		M1-The Role of Risk Analysis in Environmental Security & Emergency Risk in the Mediterranean Region	M2-Integrating Risk and Economics	M3-Foresight & Risk Management	M4-SYM: Space and Risk
<b>Events</b>	Noon-1:30 PM	Luncheon - Distinguished Award Winner			
<b>Sessions</b>	1:30-3:00 PM	M10-Model Uncertainties	M11-Economics and Natural Systems	M12-SYM: Genetically Modified Organisms: Assessment of Benefits and Risks to Health and the Environment	M13-Symposium: Risk Assessment and Risk Communication: Needs for Bioterrorism Response
	3:00-3:30 PM	Poster Session 1 Topics: Exposure, Dose Response and Risk Communication			
	3:30-5:00 PM	M19-Engineering Systems	M20-Paradigms for Regulation	M21-PP: Food/Water Risk Analysis I: Microbial & Chemical Risks	M22-Symposium: Risk Assessment and Risk Communication: Methodologies and Tools for Bioterrorism Analysis
<b>Specialty Group Meetings</b>	<b>SPECIALTY GROUP MEETINGS – ROOMS TO BE DETERMINED</b>				<i>Authors will be at their poster for questions and answers during the Poster Sessions. Posters will be located in the Ballroom Foyer.</i>
	5:30-7:00 PM	Food & Water Business Meeting/Mixer			
		Risk Science & Law Business Meeting/Mixer			

<b>MONDAY</b>	7:15-8:00 AM	New Member Breakfast			
	8:00 AM-5:30 PM	Registration			
	8:30-10:00 AM	<i>Plenary Session: Paul Gilman; US EPA</i>			
<b>Events</b>	10:00 AM-4:00 PM	Exhibits Open - Ballroom Foyer			
	<b>SALON F</b>	<b>SALON A</b>	<b>GUILFORD</b>	<b>HOMELAND</b>	<b>FEDERAL HILL</b>
	M5- <b>SYM</b> : Epidemiology and Individual Risk in Litigation	M6- <b>PP</b> : Computational Methods & Modeling	M7-Communicating About Drinking Water Safety	M8-Risk Communication: Warnings, Advisories and Labels	M9- <b>SYM</b> : Probabilistic Methods to Assess Worker Exposure to Agricultural Pesticides, Part 1
	<b>Noon-1:30 PM</b>	<b>Luncheon - Distinguished Award Winner</b>			
	M14-Panel Discussion: Developments in Risk & Law, 2003	M15- <b>SYM</b> : Integrating Epidemiological Data in Risk Assessment, Part 1	M16-The Bridge From Present to Future: Long-Term Risk Management for Contaminated Sites	M17-Risk Perception: The Role of Affect in Risk Perception	M18- <b>SYM</b> : Probabilistic Methods to Assess Worker Exposure to Agricultural Pesticides, Part 2
	<b>3:00-3:30 PM</b>	<b>Poster Session 1 Topics: Exposure, Dose Response and Risk Communication</b>			
	M23- <b>SYM &amp; PP</b> : Generating and Utilizing Aggregate Exposure Data: A Conversation Between Modelers, Regulators and Research Scientists	M24- <b>SYM</b> : Integrating Epidemiological Data in Risk Assessment, Part 2	M25- <b>SYM</b> : Risk Integration at Contaminated Sites: Eye on the Future	M26-Risk Communication: News Media Coverage of Risk	M27- <b>SYM</b> : Agricultural Chemical Safety Assessment: A Multi-Sector, Internal Project
<b>SPECIALTY GROUP MEETINGS – ROOMS TO BE DETERMINED</b>					
<b>5:30-7:00 PM</b>	Exposure Assessment Business Meeting		<b>KEY</b> <b>SYM = Symposium</b> <b>PP = Poster Platform</b>		
	Risk Communication Business Meeting				
					<b>Don't forget the Wednesday afternoon lottery.</b> <b>You gotta stay to win!!</b>

<b>TUESDAY</b>	7:00-8:00 AM	Chapters and Sections Breakfast	7:00-8:00 AM	Specialty Group Chairs Breakfast
	8:00 AM-5:30 PM	Registration		
	8:30-10:00 AM	<i>Plenary Session: Bridging International Divides: Does the Developing World Need Risk Analysis?</i>		
	10:00-10:30 AM	Poster Session 2 Topics: Exposure Assessment and Risk Communication		
<b>Events</b>	10:00 AM-4:00 PM	Exhibits Open - Ballroom Foyer		
<b>Sessions</b>	10:30 AM-noon	<b>Mt. WASHINGTON</b>	<b>FELLS POINT</b>	<b>SALON E</b>
		T1-Late Breaker	T2-Does Quantitative Risk Assessment Inform Regulatory Decision Making? Evidence "For" and "Against"	T3- <b>SYM</b> : Mycotoxins: Risks, Regulations & Economic Impacts
<b>Events</b>	Noon-1:30 PM	Luncheon - SRA Annual Business Meeting		
<b>Sessions</b>	1:30-3:00 PM	T10-Symposium: Structured & Defendable Decision Making Processes for Reuse of Contaminated and Disturbed Sites, Part 2	T11-Uncertainty or Conservatism in IRIS & Other Health-Based Values	T12- <b>SYM</b> : Risk Assessment & Food Security
				T13- <b>PP</b> : Communicating the Risk of Disease
	3:00-3:30 PM	Poster Session 3 Topics: Risk Management, Terrorism and Risk Communication		
	3:30-5:00 PM	T19-Risk Assessment for Sediment M10-Model Uncertainties	T20-Uncertainty or Conservatism in MCLs	T21- <b>PP</b> : Food/Water Safety Risk Analysis II: Microbial Modeling & Case Studies
				T22-Infrastructure
<b>Specialty Group Meetings</b>	<b>SPECIALTY GROUP MEETINGS – ROOMS TO BE DETERMINED</b>			
	5:00-6:30 PM	Ecological Risk Assessment/Dose Response Business Meeting		
				<p style="text-align: center;"><b>KEY</b></p> <p>SYM = Symposium PP = Poster Platform</p>

<b>TUESDAY</b>	7:00-8:00 AM	Chapters and Sections Breakfast	7:00-8:00 AM	Specialty Group Chairs Breakfast
	8:00 AM-5:30 PM	Registration		
	8:30-10:00 AM	<i>Plenary Session: Bridging International Divides: Does the Developing World Need Risk Analysis?</i>		
	10:00-10:30 AM	Poster Session 2 Topics: Exposure Assessment and Risk Communication		
<b>Events</b>	10:00 AM-4:00 PM	Exhibits Open - Ballroom Foyer		

<b>SALON F</b>	<b>SALON A</b>	<b>GUILFORD</b>	<b>HOMELAND</b>	<b>FEDERAL HILL</b>
T5-SYM: The Voluntary Children's Chemical Evaluation Program Pilot: Integrative Exposure Evaluations to Enhance Decision Making	T6-PP: PBPK Models: Parameters Distributions & Predictions	T7-Risk Management: The Big Picture	T8-Risk Perception: Trust and Competence	T9-Emerging Issues in Epidemiology
<b>Noon-1:30 PM</b>		Luncheon - Distinguished Award Winner		
T14-PP: Inhaled Agents: Approaches & Applications	T15-PP: Characterizing Children's Risk	T16-Risks, Benefits, Decisions, & Values	T17-Stakeholder Involvement	T18-SYM: Bioavailability/Uptake for Human or Ecological Receptors
<b>3:00-3:30 PM</b>		Poster Session 3 Topics: Risk Management, Terrorism and Risk Communication		
T23-Inhalation-Related Exposures	T24-SYM: The State of the Science on Children's Health Research	T25-SYM: Bridging the Land Use and Risk Analysis Divide at U.S. Department of Energy Sites	T26-SYM: Determinants of Trust in Risk Management	T27-Late Breaker

**SPECIALTY GROUP MEETINGS – ROOMS TO BE DETERMINED**

**5:30-7:00 PM**

Engineering Business Meeting  
Economics & Benefits Business Meeting/Mixer

*Authors will be at their poster for questions and answers during the Poster Sessions. Posters will be located in the Ballroom Foyer.*

**Don't forget the Wednesday afternoon lottery. You gotta stay to win!!**

<b>WEDNESDAY</b>	7:00-8:00 AM	Risk Communication Specialty Group – Planning a Forum: What We Know and Need to Learn About Risk Communication			
	8:00 AM-2:00 PM	Registration			
<b>Events</b>	8:30-10:00 AM	<i>Plenary Session: Building Bridges to the Future: Lessons Learned from Anthrax, 2001</i>			
	10:00-10:30 AM	Poster Session 4 Topics: Ecological Risk Assessment, Regulatory Policy and Applications in Government and Industry			
<b>Sessions</b>	10:00 AM-Noon	Exhibits Open - Ballroom Foyer			
	10:30 AM-Noon	<b>MT. WASHINGTON</b>	<b>FELLS POINT</b>	<b>SALON E</b>	<b>SALON D</b>
<b>Round Tables</b>	10:30 AM-Noon	W1-New Methods in Ecological Risk Assessment, Part 1	W2- <b>SYM</b> : Value of Information Techniques	W3- <b>SYM</b> : Uses and Interpretation of Human and Biomonitoring Data	W4- <b>PP</b> : Risk Communication for Terrorism Response
	Noon-1:30 PM	<b>Order a box lunch! See the registration form.</b>		WRT1-Roundtable 1: The State of Risk Analysis Education and Training, Are We Meeting the Needs?	WRT2-Roundtable 2: Estimating Response at Low Dose
<b>Sessions</b>	1:30-3:00 PM	W10-New Methods in Ecological Risk Assessment, Part 2	W11- <b>SYM</b> : Visualizing Risk: Using Images for Risk Communication	W12- <b>PP</b> : Food Related Government and Policy Applications	W13-Development of Risk Analysis for Aerosolized Micro Organisms
	3:30-5:00 PM	<i>These are the Lottery Sessions. Plan on staying for these and you may win FREE REGISTRATION!</i>			
	3:30-5:00 PM	W19-Modeling Approaches in Ecological Risk Assessment	W20-Precautionary Regulation in America & Europe	W21-Food & Risk Communication	W22-Methodology for Industrial Risk Assessment and Management

<sup>6</sup> Preliminary Program Subject to Change – Go to [www.sra.org](http://www.sra.org) for new updates and a complete listing of sessions, presentations and abstracts!!

<b>WEDNESDAY</b>	7:00-8:00 AM	Risk Communication Specialty Group – Planning a Forum: What We Know and Need to Learn About Risk Communication
	8:00 AM-2:00 PM	Registration
<b>Events</b>	8:30-10:00 AM	<i>Plenary Session: Building Bridges to the Future: Lessons Learned from Anthrax, 2001</i>
	10:00-10:30 AM	Poster Session 4 Topics: Ecological Risk Assessment, Regulatory Policy and Applications in Government and Industry
	10:00 AM-Noon	Exhibits Open - Ballroom Foyer

SALON F	SALON A	GUILFORD	HOMELAND	FEDERAL HILL
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W5- <b>SYM</b> : Impacts on Risk Policy and Practice: Red Book, Risk Commission, Understanding Risk	W6- <b>PP</b> : Aggregate and Cumulative Risk Assessment	W7- <b>SYM</b> : Pathogen Performance Standards: Insight from Risk Assessment and Economics	W8-Risk Perception and Development: Conservation and Land Use	W9- <b>SYM</b> : Comparison of Threshold Dose-Response Methods for Complete Data Sets: Copper as a Case Study
WRT3–Roundtable 3: Risk Legislation and the Government: What’s Hot and What’s Not	WRT4–Roundtable 4: What are Consultants For and How to be One	WRT5–Roundtable 5: Writing Winning Proposals	WRT6–Roundtable 6: Making Interdisciplinary Collaborations Work	
W14-Regulatory Processes, Peer Review & Validation	W15- <b>SYM</b> : Expert Judgement in Characterizing Uncertainties for Quantitative Risk Assessment, Part 1	W16-Evaluating Risk Tradeoffs	W17-Risk Perception: Controversial Technologies	W18-Dietary or Background Related Exposures

**3:30-5:00 PM**      *These are the Lottery Sessions. Plan on staying for these and you may win FREE REGISTRATION!*

W23- <b>SYM</b> : International Needs/Resources in Risk Assessment	W24- <b>SYM</b> : Expert Judgement in Characterizing Uncertainties for Quantitative Risk Assessment, Part 2	W25-Session to be Announced	W26-Risk Perception: Thinking About Risks	W27-Advanced Risk Scenario Simulation Strategies
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## Registration Hours

Sunday, December 7 .....	4-7 PM
Monday, December 8 .....	8 AM-5:30 PM
Tuesday, December 9 .....	8 AM-5:30 PM
Wednesday, December 10 .....	8 AM-2 PM

## Conference Events

### SRA Council Meetings

Sunday, 12/7, 1–5 PM  
Tuesday, 12/9, 7–9 PM

### SRA Welcome Reception – (Cash Bar)

Sunday, 12/7 – 5:30–7:00 PM

### SRA National Capital Area Sponsored Reception

Tuesday, 12/9 – 5:30–7:00 PM

Reception for DC, Maryland and Virginia SRA members, sponsored by the SRA National Capital Area Chapter. Please come by to meet the organizing committee for the chapter that was revived in 2003. In 2003, we held quarterly seminars and we'd like to do much more. Come by and say hello, and let us know what other activities and programs you'd like to see the DC Area SRA Chapter undertake.

### Luncheons (Dietary Restrictions – Notify Registration Personnel)

Monday and Tuesday luncheons are included in full registration.

Wednesday box lunch will be available. **Please order on registration form.**

Noon–1:30 PM

### Specialty Group Meetings

This year the Specialty Group meetings have been scheduled for different days in order to meet the needs of the attendees. Please plan to attend any group meetings that may interest you. See the Schedule at a Glance for days and times.

## Exhibition — Ballroom Foyer

December 8-9	9:45 AM–4:00 PM
December 10	9:45 AM–Noon

At the SRA exhibition, attendees have a first-hand opportunity to examine, talk about, and learn from the products and services on display.

To request a booth at the SRA exhibition, contact Lori Strong or Sue Burk at SRA Headquarters, (703) 790-1745, email: SRA@BurkInc.com.

## Travel Program

### US Airways

Special rates have been arranged for the SRA meeting with US Airways:

**Be sure to make your reservations early!** US Airways is offering 5% discounts on applicable advance purchase fares and 10% off of 60 day advanced purchase tickets. Contact US Airways for specific details. Discounts are valid December 3-13, 2003.

**To obtain the convention discount, call US Airways Group and Meetings Reservations Office toll free at (877) 874-7687, 8:00 AM-9:30 PM Eastern Time. Refer to Gold File Number 60672858**

### HERTZ Car Rental – Special Rates

**Hertz Car Rental** is offering the SRA special low car rental rates which apply one week prior to and after the dates of the meeting. All Hertz rentals include automatic transmission and unlimited free mileage. Weekly rates require a five day minimum stay.

Special Rates:	DAILY	WEEKLY
Economy (2 door)	\$46.99/day	\$189.99/week
Compact (4 door)	\$51.99/day	\$204.99/week
Midsized	\$55.99/day	\$219.99/week
Fullsize (4 door)	\$60.99/day	\$249.99/week
Premium	\$65.99/day	\$259.99/week

Call Hertz at 1-800-654-2240. Request **ID CV#02460018** the for special rates.

## Job Hunting

Let's face it, everyone is looking for a job at one time or another. The Annual Meeting can be a place to connect with potential employers without risk to your present job, even if your boss is attending the meeting. You can send in a "blind" résumé or c.v to SRA.org using the submission form. Provide your name and contact information on the submission form. Then submit a "sanitized" résumé without contact or other identifying information. SRA will assign your résumé a number.

Potential employers will be able to look through the file of "sanitized" résumé, which will include your "résumé number." If an interested employer wants to meet with you, the employer will post a message for you using your "résumé number." The note might say "résumé numbers 12, 17, and 56 please leave your complete résumé at the hotel front desk to the attention of D.A. Smith, One in a Million Consulting Firm." Or "Dale Evans University would like to interview résumés 19 and 23, please contact J.D. Jones cell phone # to set up an appointment during the meeting."

For a résumé form or questions, contact:

Mike Johnson, SRA Headquarters  
1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101  
email: MJohnson@BurkInc.com

The résumé form is also available at [www.sra.org](http://www.sra.org) in the meetings section. These forms must be submitted no later than **November 8, 2003**. Once these forms are received, a résumé number will be issued. By November 20, 2003, a photocopy of side two (with your résumé number) will be sent back to you. Please remember your résumé number. A photocopy of side one will be posted at the meeting. The original résumé form will be kept in a book, strictly confidential, for six months after the meeting and then destroyed.

### Missed The Deadline for Abstracts??

You can submit a poster abstract until Friday, October 27, 2003. Use the late submission form at [www.sra.org](http://www.sra.org). Although the late submission process requires limited peer review, late breaking research and works in progress are welcomed.

## Workshops – Sunday, December 7

### WK1 - 8:00 AM-Noon

#### Methods and Guidance for Health Risk Assessment of Chemical Mixtures

Organizer: Linda Teuschler, [teuschler.linda@epa.gov](mailto:teuschler.linda@epa.gov), US EPA

Pre-Registration Fee: \$249, On-Site Registration Fee: \$279

This **half-day** workshop presents scientific principles and risk based methodologies for assessing cumulative health risk from exposure to chemical mixtures, including descriptions of current methods, discussions of the mechanistic basis for interaction effects, and the introduction of state-of-the-art approaches. Humans are typically exposed to chemical mixtures via irregular exposure patterns and variable doses. In recognition of this, the United States Environmental Protection Agency, Agency for Toxic Substances and Disease Registry, National Institute of Occupational Safety and Health, National Center for Toxicological Research and others have conducted research since the early 1980s to develop chemical mixture health risk assessment methods and assessments. More recently, the Food Quality Protection Act and Safe Drinking Water Act Amendments were passed in 1996, raising awareness of chemical mixtures health issues. This workshop presents chemical mixture health risk assessment topics including: procedures and definitions for use in selecting among risk assessment methods; component-based approaches: response-addition, dose addition, relative potency factors; procedures using whole mixture data; and approaches for incorporating toxicological interactions data. The content of this workshop includes a general overview of chemical mixture health risk assessment data evaluation and procedures, a discussion of the mechanistic bases for toxicological interactions; a detailed description of several new methods, and hands-on exercises with test data sets. Discussions include real world examples, exercise results, issues for application of the procedures, and general questions and comments. Participants are asked to bring a calculator. This course is for anyone interested in chemical mixtures risk assessment. However, basic knowledge of this area is helpful, (e.g., understanding of additivity concepts, application of the Hazard Index, etc.) An overview of the basic tenets and scientific principles will be given, but emphasis will be on additional development of these tenets and presentation of new ideas and approaches. More information about the workshop can be found at [www.ramas.com/mixture.htm](http://www.ramas.com/mixture.htm).

### WK2 - 8:00 AM-Noon

#### Beyond Point Estimates: Risk Assessment Using Interval and Possibilistic Arithmetic

Organizer: J. Arlin Cooper, [acooper@sandia.gov](mailto:acooper@sandia.gov), Sandia National Laboratories

Pre-Registration Fee: \$175, On-Site Registration Fee: \$205

This **half-day** workshop introduces interval analysis and possibility theory for propagating uncertainty in quantitative risk analyses where data are very limited. Interval analysis, although less powerful than other methods when information is abundant, can be used for analyzing uncertainty of all kinds no matter what its nature or source. As the simplest method for handling uncertain quanti-

ties, we use it to demonstrate many of the commonalities that unite all uncertainty theories. Some of its details can be subtle and inattention to them may lead to seriously erroneous conclusions. Topics will include (i) the algebra you already know can hurt you, (ii) how to specify inputs when you don't know much, (iii) comparison with other approaches of uncertainty analysis, and (iv) combining possibility and probability theories. The methods will be applied to several examples and case studies, including ground water contamination, event-tree safety assessment. Participants will receive a workbook of illustrations used during the workshop. More information about the workshop can be found at [www.ramas.com/interval.htm](http://www.ramas.com/interval.htm).

### WK3 - 1:00-5:30 PM

#### **What Monte Carlo Cannot Do: An Introduction to Imprecise Probabilities**

*Organizer: Scott Ferson, [scott@ramas.com](mailto:scott@ramas.com), Applied Biomathematics*

Pre-Registration Fee: \$175, On-Site Registration Fee: \$205

This **half-day** tutorial introduces interval-valued probabilities and imprecisely specified probability distributions and their uses in risk analysis. It reviews five practical and quantitative approaches based on these ideas. Although the five approaches have distinct origins and many important differences, the tutorial emphasizes their commonality of purpose and similarities of their ideas and methods. These approaches represent a single perspective on risk analysis that's sharply different from both traditional worst-case and standard probabilistic analysis. Each approach is illustrated with a numerical case study and summarized by a checklist of reasons to use it, and not to use it. The first approach is based on the idea of interval probability, where the probability of an event is given as an interval of possible values, which provides a convenient way to assess the reliability of fault-tree risk analyses. This concept is generalized by probability bounds analysis, which propagates constraints on a distribution function through mathematical operations, and Dempster-Shafer theory which recognizes that uncertainty attending any real-world measurement may not allow an analyst to distinguish between events in empirical evidence. These approaches are related to robust Bayes (aka Bayesian sensitivity) methods, in which an analyst can relax the requirement that the prior distribution and likelihood function must be precisely specified. The most general approach comes from the theory of imprecise probabilities in which uncertainty is represented by closed, convex sets of probability distributions. These five approaches redress, or even comprehensively solve, several major deficiencies of Monte Carlo simulations and of standard probability theory in risk assessments, including doubt about distribution shapes and their parameters, ignorance about the dependencies among variables, non-negligible measurement error or laboratory imprecision, data censoring, and the need for back calculations in remediation planning. More information about the workshop can be found at [www.ramas.com/ipbaltimore.htm](http://www.ramas.com/ipbaltimore.htm).

### WK4 - 7:30 AM-4:15 PM

#### **Application of Spatial Techniques in Ecological Risk Assessment**

*Organizer: Bruce Hope, [hope.bruce@deq.state.or.us](mailto:hope.bruce@deq.state.or.us), Oregon Department of Environmental Quality*

Pre-Registration Fee: \$250, On-Site Registration Fee: \$310

When assessing risks posed by chemical contaminants, ecological risk assessors must estimate a receptor's level of exposure to contaminants in either abiotic (soil, water, etc.) or biotic (tissues, prey items) media. Such assessments are typically performed at state or federally regulated hazardous waste sites or for agro-ecosystems. The scientific and regulatory communities generally recognize that the relative spatial positions of receptors and contaminated media can strongly influence estimates of exposure and hence of risk. Traditional exposure estimation methods fundamentally assume that receptors have equal and random access to all areas of an exposure unit, thus allowing their exposure to be represented by the mean concentration in that unit. That receptors and contaminants may not occur evenly throughout the exposure unit or that receptors may not move completely at random (i.e., unconstrained by landscape features such as habitat) are not considerations. This "averaging" assumption may lead to false positive or false negative outcomes, either of which is potentially misleading to risk managers. These issues may be avoided or minimized if "averaging" assumptions were replaced by the explicit consideration of the heterogeneous distribution of receptors, their habitats, and contamination. Tools for incorporating such spatial considerations in ecological risk assessments are becoming increasingly available but have yet to gain wide acceptance or use. This **full day** workshop will discuss recent advances in this field and demonstrate several spatially explicit techniques that may be practically applied to both terrestrial and aquatic environments and to abiotic media. The goal of this workshop is to further the use of these techniques in typical ecological risk assessments. An additional goal is to increase risk managers' willingness to consider results based on these methods when making remedial and other types of risk-based decisions. More information about the workshop can be found at [www.ramas.com/ecospatial.htm](http://www.ramas.com/ecospatial.htm).

### WK5 - 8:00 AM-5:00 PM

#### **Risk Communication: Application and Studies in Military and Emergency Settings**

*Organizer: Igor Linkov, [ILinkov@icfconsulting.com](mailto:ILinkov@icfconsulting.com), ICF Consulting*

Pre-Registration Fee: \$350, On-Site Registration Fee: \$410

This **full-day** workshop will explore strategies for addressing risk communication challenges in military and emergency settings. The U.S. military can offer many examples of leading edge risk communication efforts. Over the past few years, the military has been adopting and applying basic and advanced risk communication principles to a variety of health, environmental, and safety risk challenges. Basic risk communication training is now included in several military leadership schools, as well as in medical, safety, health, and environmental courses. A focal point of the workshop will be the illustration of the process in current efforts with the U.S. military to systematically identify effective health benefits and to produce risk communications strategies for vaccines, including anthrax and

smallpox vaccines. Simple in structure but powerful in application, the process deals explicitly with the knowledge and judgments of the technical experts and non-experts involved in a communication “transaction.” It enables appropriate strategies and salient messages to be developed from a mapping of the information and views held by both groups. Also, it takes advantage of simple measurement methods to enable communicators to adjust strategies and messages in ways that can also improve their overall process for developing both. Presenters will explore the process in detail. The workshop will provide a forum for dialogue about the recent developments in the field of risk communication, and provide participants an opportunity to practice risk communication planning and strategy development through hands-on exercises. Case examples of successful applications from around the world will be offered. Participants will be encouraged to share examples of their past or current risk management and risk communication challenges to stimulate “real time” applications of the process. More information about the workshop can be found at [www.ramas.com/commrisk.htm](http://www.ramas.com/commrisk.htm).

#### WK6 - 8:00 AM-5:00 PM

##### Bayesian Analysis and Applications in Risk Assessment

Organizer: Robert McDowell, [robert.m.mcdowell@usda.gov](mailto:robert.m.mcdowell@usda.gov), USDA

Pre-Registration Fee: \$250, On-Site Registration Fee: \$310

Bayesian statistical methods are enjoying a renaissance and are increasingly being applied in many fields, including risk assessment. The **full day** workshop will cover four main areas: (1) the main features and advantages/drawbacks of Bayesian statistics; (2) specific applications in several fields of risk analysis; (3) solutions to implementing Bayesian calculations in different software environments; and (4) an introduction to Markov chain Monte Carlo methods and WINBugs software. The derivation of Bayes theorem and its extensions to discrete and continuous distributions will be covered, as well as the relationship of Bayes theorem to other forms of logical inference. The fundamental concepts of prior probability, likelihood, and posterior probability will be illustrated using a series of examples of increasing complexity. These include (1) problems featuring discrete and continuous prior distributions, and (2) likelihood values obtained by inspection, mathematical functions, count data, and logical inference. Topics will include Bayesian methods for parameter estimation and categorical analysis, and are demonstrated and developed using examples from engineering, medicine, public health, and toxicology. Discussions will include similarities and differences between frequentist and Bayesian methods. The second half of the workshop focuses on the problems of implementing Bayesian computations. The computational aspects of Bayesian analysis are discussed further with special emphasis on implementing Bayesian calculations in probabilistic simulation models. In addition to a thorough discussion of conjugate distributions useful in risk analysis, a method of utilizing output from @Risk to do non-parametric Bayesian calculations will be demonstrated. By providing a practical computational solution to formerly intractable problems, Markov chain Monte Carlo methods have played a significant role in expanding the application of Bayesian methods. This important technique is introduced using WinBugs software to illustrate the simultaneous estimation of parameters to develop posterior distributions. In addition to the demonstrations and hands-on activities, we will discuss the advantages and drawbacks to this approach. More information about the workshop can be found at [www.ramas.com/bayes.htm](http://www.ramas.com/bayes.htm).

#### WK7 - 1:00-5:00 PM

##### Public Choices, Risk Analysis and the Development of Regulations

Organizer: Peter Vardon, [pvardon@cfsan.fda.gov](mailto:pvardon@cfsan.fda.gov), FDA

Pre-Registration Fee: \$125, On-Site Registration Fee: \$155

This **half-day** workshop, sponsored by the Risk and Economics Specialty Group, will attempt to further our understanding of the development of health and safety regulations by integrating the insights of public choice economics and risk analysis. The public choice theory challenges the regulatory state by demonstrating that self-interested individuals may have private incentives to ‘pressure’ the regulatory state to develop regulations that create economic advantage for them, not strictly for the public interest. This is especially true when the economic benefits are concentrated in a distinguishable group, or when potential countervailing pressure groups are at a disadvantage in influencing the development of regulations, because the costs of regulation are diffuse or uncertain. The relevance of public choice economics, within a risk analysis framework, is that a successful risk analysis must incorporate the effects of private incentives and group pressures that can influence the adoption of the preferred regulation or policy. Because trade groups routinely lobby Congress to adopt or change regulations for economic advantage, a successful public risk analysis should account for private group pressures and private incentives. The workshop will highlight some of the problems associated with the current practice of risk analysis by providing participants with examples and case studies of safety policies that might have benefited from a closer attention to the divergence between private and public risks and incentives. The workshop will define private interest and public risk and examine the assumptions, uncertainty, and variability of private and public risks and costs, and the resulting implications for the development of regulations. The goal is to encourage participants to produce a new kind of “risk analysis” by using public choice insights to help generate new and better answers to risk policy questions that incorporate non-cooperation problems.

#### WK8 - 8:00 AM-Noon

##### Elementary Economics for Non-Economist Risk Assessors

Organizer: Richard Belzer, [belzer@regulatorycheckbook.org](mailto:belzer@regulatorycheckbook.org), Regulatory Checkbook

Pre-Registration Fee: \$150, On-Site Registration Fee \$180

This **half-day** continuing-education course introduces non-economist risk assessors to some elementary economics concepts and helps explain how risk assessments are incorporated in benefit-cost analysis. The use of benefit-cost analysis as an input to decision-making in matters related to risk regulation continues to intensify. In turn, estimating the benefits of alternative regulatory actions generally requires risk assessments as inputs. Economists who work in risk analysis need to make substantial effort to understand toxicology, epidemiology, and other sciences as they are employed for risk assessment. In turn, non-economist risk assessors can be more effective if they learn about the economic paradigm. The workshop instructors will focus on the fundamental economic of principles of marginal analysis and tradeoffs. They will then apply these principles to a realistic but hypothetical risk assessment problem. By the end of the course, participants will be able to decipher the riddle why “costs” matter in risk regulation, who really bears “costs,” and why in the final analysis “costs” don’t really exist!

# ***SRA Hotel Reservation Form***

Renaissance Harborplace Hotel  
202 East Pratt Street  
Baltimore, MD 21202

*Phone: 800-468-3571; FAX: 410-539-5780*

**Web Reservations:** <http://www.stayatrenaissance.com/SocietyforRiskAnalysis/>

\$135.00 single/double

Reservation Deadline: NOVEMBER 14, 2003

- ◆ Reservations received after November 14, 2003 will be on a space and rate available basis.
- ◆ Rates are good for 3 days before and after the convention dates upon availability.
- ◆ Check In Time: 4:00 PM – Check Out Time: 11:00 AM
- ◆ Room rates are subject to the current 12.5% Room tax.
- ◆ Family plan is at no additional charge for children 18 years and younger, using existing bedding.
- ◆ Reservation must be received and guaranteed by November 14, 2003 with one of the following:
  - An enclosed check or money order covering the first night's stay to include 12.5% occupancy tax.  
Amount of Check/Money Order \$ \_\_\_\_\_
  - or
  - Major credit card with an expiration date and an authorized signature.

- ◆ Deposits will be refunded only if cancellation notification is received at least 48 hours (2 days) prior to arrival.

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

City: \_\_\_\_\_ State/Country: \_\_\_\_\_ ZIP/Postal Code: \_\_\_\_\_  
Phone: \_\_\_\_\_ FAX: \_\_\_\_\_

Sharing Room With: \_\_\_\_\_

Arrival Date: \_\_\_\_\_ Time: \_\_\_\_\_ Depart. Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 King Bed Smoking                       2 Double Beds Smoking  
 King Bed Non-Smoking                       2 Double Beds Non-Smoking

Accommodations for the Disabled: The Renaissance Harborplace, in compliance with the American Disabilities Act, has equipment and services available. Please inform them of your needs prior to arrival.

Credit Card:  American Express     MasterCard     VISA     Carte Blanche     Diners Club     Discover

Cardholder's Name: \_\_\_\_\_ Exp. Date: \_\_\_\_\_

Credit Card Number: \_\_\_\_\_

Cardholder's Signature \_\_\_\_\_

Marriott Rewards Number: \_\_\_\_\_

*Please mail or FAX your reservation to the address/FAX number above*



Baltimore, Maryland  
23rd Annual Meeting

# Society for Risk Analysis — Registration Form

## December 7-10, 2003

**Member # SRA** \_\_\_\_\_

**PLEASE PRINT CLEARLY**

**Preregistration Deadline: Monday, November 14**

Name: (For Badge) \_\_\_\_\_

Affiliation: (For Badge, Limit to 15 Characters and Spaces) \_\_\_\_\_

Mailing Address: (Include Full Name of Business Affiliation) \_\_\_\_\_

City: \_\_\_\_\_ State/Country: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Phone: \_\_\_\_\_ FAX: \_\_\_\_\_ Email: \_\_\_\_\_



### FEES

Continuing Member\*\*

Member (*Available to SRA members who have paid tier 2003 dues only*)

Non-Member\*\*

Student

### Wednesday Box Lunch

Turkey  Ham  Vegetarian

### Workshops — Sunday, December 7

WK1-AM (Teuschler)

WK2-AM (Cooper)

WK3-PM (Ferson)

WK4-All Day (Hope)

WK5-All Day (Linkov)

WK6-All Day (McDowell)

WK7-PM (Vardon)

WK8-AM (Belzer)

### Preregistration

\$490.00

\$385.00

\$555.00

\$105.00

\$ 20.00

\$249.00

\$175.00

\$175.00

\$250.00

\$350.00

\$250.00

\$125.00

\$150.00

### After 11/14/03

\$590.00

\$485.00

\$655.00

\$205.00

\$ 20.00

\$279.00

\$205.00

\$205.00

\$310.00

\$410.00

\$310.00

\$155.00

\$180.00

**Total** \_\_\_\_\_

\*Includes Meeting Registration and 2004 Membership Dues.

\*\*Includes a 1 year SRA Membership for 2004

### PAYMENT (please indicate method of payment)

Check # \_\_\_\_\_  Purchase Order # \_\_\_\_\_  VISA  MasterCard  American Express  Discover

Card # \_\_\_\_\_ CV2 #\*\* \_\_\_\_\_ Exp. Date \_\_\_\_\_

Cardholder Name \_\_\_\_\_ Signature \_\_\_\_\_

Cardholder Billing Address \_\_\_\_\_

Make check (please note check # above) payable to and mail to:

### Society for Risk Analysis

1313 Dolley Madison Blvd., Suite 402, McLean, VA 22101

\*For Visa, Mastercard, and Discover these numbers are on the back of your card and are the last 3 digits on the signature panel. For American Express these 4 digits are on the front of your card above your card number in the right corner.

All cancellations are subject to a \$50 service charge. Cancellations must be in writing to the SRA Secretariat. Cancellation letters received by November 14 will be refunded registration fees minus the \$50 service charge after the meeting. No refunds will be issued on cancellations received after November 14.

**If FAXing, (703) 790-2672, registration with credit card payment, please DO NOT mail original**

*Society for Risk Analysis*

*1313 Dolley Madison Blvd.*

*Suite 402*

*McLean, VA 22101*

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## 2003 Annual Meeting Program Committee

Caron Chess, Chair

Stanley Levinson, Co-chair Scheduling

Paul Locke, Co-chair Symposia

Kimberly Thompson, Chair Travel Awards

Keith Florig, Chair Best Paper Awards

Rick Belzer

Yvette Lowney

Ron Brown

Cynthia Mann

Gail Charnley

Katherine McComas

Annie Jarabek

Christina McLaughlin

Bob Fares

Ali Mosleh

Scott Farrow

Robert O'Connor

John Keller

Zubair Saleem

Igor Linkov

Henry Willis

## Host Committee

William Farland

David Kent

Dominic Mancini

Katherine McComas

Kara Morgan

Robert O'Connor

Mary Ann Simmons



**Baltimore, Maryland**

**23rd Annual Meeting**