

Register Online and check out the complete program at www.sra.org

Society for Risk Analysis



2004 Annual Meeting

Risk Analysis: The Profession and the Future



December 5-8

Wyndham Palm Springs

Palm Springs, California

**Preliminary Program &
Registration Packet**

Society For Risk Analysis Annual Meeting

2004 Preliminary Program and Registration Packet

Palm Springs, California

The Society for Risk Analysis is pleased to hold its Annual Meeting at the Wyndham Palm Springs Hotel. With world-class facilities and a diverse range of cultural attractions, Palm Springs is always a favorite meeting location.

The hotel is 1.5 miles from the Palm Springs International Airport. The Wyndham provides complimentary transportation to and from the Palm Springs International Airport. Go to baggage claim and pick up the Wyndham courtesy phone.

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New this Year!

Official SRA Golf Tournament!



All levels of play welcome! See page 8 for details.

SRA Annual Meeting Theme

The theme of this year's meeting is Risk Analysis: The Profession and the Future. Our Society is a remarkable association. Its members are scientists and practitioners trained in multiple disciplines who come from around the world. They are employed by government, industry, consulting firms, NGOs, academic institutions, and themselves. They seek one another's company because they face problems requiring such diverse perspectives. As we approach our 25th year, it is a good time to celebrate our shared past and plan for a common future.

Missed The Deadline for Abstracts??

You can submit a poster abstract until Friday, October 22, 2004. Use the late submission form at www.sra.org. Late submissions including late breaking research and works in progress are welcomed.

Be a Die Hard Risk Analyst for Fun and Profit!

Attend the last session on Wednesday, December 8 (3:30-5:00 PM) and you will be eligible to win a terrific benefit. One attendee will be selected at random from the nine sessions and will receive a full credit toward 2005 Annual Meeting fees. This is at least a \$400 value, and is not available in stores! Everyone else will receive an official SRA designed T-shirt!!

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

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; Website: www.sra.org

Preliminary Program Subject to Change – Go to www.sra.org for new updates and a complete listing of sessions, presentations and abstracts!!

Meeting Highlights

Wednesday Round Table Discussions

A variety of round table discussions will be offered this year. They will take place on Wednesday, December 8, 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:

- *Developments in Risk Science and Law 2004 - Chaired by: Susan Poulter*
- *Filling the Data and Knowledge Gap for Modeling Pre-harvest Risks - Chaired by: Linda Abbott/Clare Narrod*
- *Can Drinking Water Risk Assessment Approaches be Harmonized? A Case Study with Vinyl Chloride - Chaired by: Harvey Clewell*
- *The Benchmark Dose and Risk Assessment - 20 Years Later - Chaired by: Peter Preuss*
- *Internationalization at SRA - Chaired by: Jonathan Wiener and Robin Cantor*
- *Risk and Culture: Incommensurate Risks and the Regulator's Dilemma - Chaired by: Terre Satterfield*

Poster Sessions

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

Opportunity to Promote Academic Programs

There will be a formal opportunity at this year's Society for Risk Analysis Annual Meeting for universities and colleges to share information about their educational programs and courses related to risk analysis. These could include graduate or undergraduate programs or courses in risk assessment, risk characterization, risk communication, risk management, or policy relating to risk. Please bring a poster, brochures, or other handouts on your program for display and distribution at the meeting at a to-be-specified location.

Wyndham by Request

Join Wyndham by Request for free at their website and enjoy the benefits. When you arrive at a Wyndham Hotel or Resort, your key will be waiting for you, and your room will be prepared to your specifications - including a welcome beverage and snack. As a Wyndham ByRequest member, your stay experience is customized according to your specifications. We offer many other member benefits, too. Here are just a few: Free local and domestic long distance calls; Free high-speed Internet access; and 500+ miles per stay. Go to www.wyndham.com and join and then make your reservation.

Registration Information



REGISTER ONLINE: at 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**)



REGISTER 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.

CANCELLATION POLICY: All cancellations are subject to a \$50 service charge. Cancellations must be in writing to the SRA Secretariat. Cancellation letters received by November 5 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 5.

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

MONDAY	7:15-8:00 AM	New Member Breakfast			
	8:00 AM-5:30 PM	Registration			
	8:30-10:00 AM	<i>Plenary Session: Risk Analysis: An Integrated National Initiative</i>			
	10:00-10:30 AM	Poster Session 1 Topics: Exposure Assessment, Preparedness and Perceptions for Terrorism/Extreme Events			
Events	10:00 AM-4:00 PM	Exhibits Open - Ballroom Foyer			
Sessions	10:30 AM-Noon	CHINO 1	CHINO 2	PUEBLO	ANDREAS
		M1-Space and Hydrogen	M2-Methods for Human and Ecological Risk Assessment	M3-SYM: Microbial Dose-Response Assessment for Inhalation Exposures	M4-SYM: Children's Health and Environmental Exposures in Europe
Events	Noon-1:30 PM	Luncheon - Distinguished Award Winner			
Sessions	1:30-3:00 PM	M10-Air, Water and Power	M11-Landscape and Regional Scale Ecological Risk Assessment	M12-SYM: Recent Data on Naphthalene Toxicity and Its Impact on Risk Assessment, Part 1	M13-SYM: The Voluntary Children's Chemical Evaluation Program: Progress in Meeting the Challenges
	3:00-3:30 PM	Poster Session 1 Topics: Exposure Assessment, Preparedness and Perceptions for Terrorism/Extreme Events			
	3:30-5:00 PM	M19-Critical Infrastructure Issues	M20-SYM: Spatially-Explicit Ecological Risk Assessments	M21-SYM: Recent Data on Naphthalene Toxicity and Its Impact on Risk Assessment, Part 2	M22-Risk Regulation: Decision Theories and Economics
Specialty Group Meetings	SPECIALTY GROUP MEETINGS/MIXERS – ROOMS TO BE DETERMINED				
	AM	7-8 AM – Engineering Specialty Group Business Meeting			
	PM	5:30-6:30 PM – Risk, Science and Law Business Meeting		5:30-6:30 PM – Exposure Assessment Mixer	
		5:30-7 PM – Economics & Benefits Analysis Mixer		5:30-6:30 PM – Risk Communication Business Meeting	
		6-6:30 PM – Ecological Risk Assessment Business Meeting		6:30-7:30 PM – Risk Comm./Ecological Risk Assessment Joint Mixer	

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

MONDAY	7:15-8:00 AM	New Member Breakfast				KEY SYM = Symposium PP = Poster Platform			
	8:00 AM-5:30 PM	Registration							
	8:30-10:00 AM	<i>Plenary Session: Risk Analysis: An Integrated National Initiative</i>							
	10:00-10:30 AM	Poster Session 1 Topics: Exposure Assessment, Preparedness and Perceptions for Terrorism/Extreme Events							
Events	10:00 AM-4:00 PM	Exhibits Open - Ballroom Foyer							
SIERRA		VENTURA		MOJAVE		SAN JACINTO		SANTA ROSA	
M5- SYM : The Relationship Between Science and Policy: From Redbook to Orangebook and Beyond		M6-Pesticide Exposure Assessment		M7-Community/Facility Air Quality Assessment: An Integrated Approach		M8- PP : Life Stage Analyses and Inhalation Applications		M9-Risk Perceptions and Behavior	
Noon-1:30 PM		Luncheon - Distinguished Award Winner							
M14- SYM : Antibiotic-Resistant Bacteria in Animals Intended for Human Food		M15-VOC Exposure Assessment		M16- SYM : Risk Assessment and Multi Criteria Decision Analysis: At the Cross Roads, Part 1		M17- PP : Risk Management		M18- PP : Risk Communication and Culture	
3:00-3:30 PM		Poster Session 1 Topics: Exposure Assessment, Preparedness and Perceptions for Terrorism/Extreme Events							
M23-Regulatory Analysis: At Home and Abroad		M24-Uncertainty Analysis in Exposure Assessment		M25- SYM : Risk Assessment and Multi Criteria Decision Analysis: At the Cross Roads, Part 2		M26- SYM : Managing Risks with Ranking Tools		M27-Communicating Risks of Natural Hazards	
SPECIALTY GROUP MEETINGS/MIXERS – ROOMS TO BE DETERMINED									
AM	7-8 AM – Engineering Specialty Group Business Meeting								
PM	5:30-6:30 PM – Risk, Science and Law Business Meeting				5:30-6:30 PM – Exposure Assessment Mixer				
	5:30-7 PM – Economics & Benefits Analysis Mixer				5:30-6:30 PM – Risk Communication Business Meeting				
	6-6:30 PM – Ecological Risk Assessment Business Meeting				6:30-7:30 PM – Risk Communication/Ecological Risk Assessment Joint Mixer				
<div style="border: 2px solid green; padding: 5px; display: inline-block;"> Don't forget the Wednesday afternoon lottery. You gotta stay to win!! </div>									

TUESDAY	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	7:30-8:30 AM	Grad Student Breakfast
	8:30-10:00 AM	<i>Plenary Session: Risk Analysis: As Others See Us</i>		
	10:00-10:30 AM	Poster Session 2 Topics: Risk Perception/Risk Communication, Social Risk, Specific Applications in Government		
Events	10:00 AM-4:00 PM	Exhibits Open - Ballroom Foyer		
Sessions	10:30 AM-Noon	CHINO 1	CHINO 2	PUEBLO
		T1-Engineering Systems	T2-Strategy and Practice	T3- SYM : Risk Analysis in Latin America: Training and Practice
	Noon-1:30 PM	Luncheon - <i>Speaker TBD</i>		
Sessions	1:30-3:00 PM	T10- SYM : Risk and Decision Making for Homeland Security, Part 1	T11-Arid Ecological Risk Assessment	T12-Systems Biology, Probabilistic Risk Assessment and Bayesian Approaches
		T13- SYM : The Food Handling Practices Model		
	3:00-3:30 PM	Poster Session 2 Topics: Risk Perception/Risk Communication, Social Risk, Specific Applications in Government		
	3:30-5:00 PM	T19- SYM : Risk and Decision Making for Homeland Security, Part 2	T20- SYM : Integrated Approach for Understanding Risks Related to Oceans and Human Health: Case Study with Harmful Algae Blooms	T21- SYM : The Interpretation of Weak Associations Identified in Environmental or Occupational Epidemiology
		T22-Food Consumption Risks		
Specialty Group Meetings	SPECIALTY GROUP MEETINGS/MIXERS – ROOMS TO BE DETERMINED			
	AM	7-8 AM – Dose Response Business Meeting/Breakfast		
	PM	5:30-6:30 PM – Dose Response/Food & Water Mixer		

KEY

SYM = Symposium
PP = Poster Platform

TUESDAY	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	7:30-8:30 AM	Grad Student Breakfast
	8:30-10:00 AM	<i>Plenary Session: Risk Analysis: As Others See Us</i>		
	10:00-10:30 AM	Poster Session 2 Topics: Risk Perception/Risk Communication, Social Risk, Specific Applications in Government		
Events	10:00 AM-4:00 PM	Exhibits Open - Ballroom Foyer		

SIERRA	VENTURA	MOJAVE	SAN JACINTO	SANTA ROSA
T5- SYM : Scientific Issues in the Regulation of Fine Particulates	T6-Occupational Exposure Assessment	T7- SYM : Synthesizing Comparative Risk Assessment and Multi-Criteria Decision Analysis for Management of Contaminated Materials. . . .	T8- PP : US EPA's IRIS Program: Advancing the Application of New Science and Methodologies in Health Assessment	T9-Risk Communication/Risk Perception and Health
Noon-1:30 PM		Luncheon - <i>Speaker TBD</i>		
T14- SYM : Recent Developments in Risk Assessment: Methods and Applications	T15- SYM : Issues in Probabilistic Methodology for Assessing Handler Exposure to Agricultural Pesticides	T16- SYM : State of the Art in Using Economics in Risk Analysis, Part 1	T17- PP : Risk Management, Risk, Science and Law	T18-Risk and Media
3:00-3:30 PM		Poster Session 2 Topics: Risk Perception/Risk Communication, Social Risk, Specific Applications in Government		
T23- SYM : ILSI Panel: Screening Tools	T24-Indoor Air Exposure Assessment	T25- SYM : State of the Art in Using Economics in Risk Analysis, Part 2	T26- PP : Regulatory Policy and Decisionmaking	T27-Risk Perception and Risk Communication-Biotech

SPECIALTY GROUP MEETINGS – ROOMS TO BE DETERMINED

AM	7-8 AM – Dose Response Business Meeting/Breakfast 7-8 AM – Food & Water Business Meeting/Breakfast	<i>Authors will be at their poster for questions and answers during the Poster Sessions. Posters will be located in the Ballroom Foyer.</i>	Don't forget the Wednesday afternoon lottery. You gotta stay to win!!
PM	5:30-6:30 PM – Dose Response/Food & Water Mixer		

WEDNESDAY	8:00 AM-5:00 PM	Registration	7-8 AM – Exposure Assessment Specialty Group Business Meeting/Breakfast 8 AM SRA Annual Business Meeting		
	8:30-10:00 AM 10:00-10:30 AM	<i>Plenary Session: Risk Analysis: Creating the Profession</i> Poster Session 3 Topics: Regulatory Policy & Decision Making, Dose Response, Ecological & Environmental Risk			
Events	10:00 AM-Noon	Exhibits Open - Ballroom Foyer			
Sessions	10:30 AM-Noon	CHINO 1	CHINO 2	PUEBLO	ANDREAS
		W1-SYM: Risk Analysis in the Age of Terrorism and Homeland Security	W2-SYM: The Potential Impact of Regulation on Innovation in the Drug Industry: The QT Issue	W3-SYM: Chemical Mixtures Health Risk Assessment Methods, Part 1	W4-SYM: Food Safety and Risk Regulation, Part 1
Round Tables	Noon-1:30 PM	<p style="text-align: center;">Order a box lunch! See the registration form.</p> <ul style="list-style-type: none"> <i>Developments in Risk Science and Law 2004 - Chaired by: Susan Poulter</i> <i>Filling the Data and Knowledge Gap for Modeling Pre-harvest Risks - Chaired by: Linda Abbott/Clare Narrod</i> 			
Sessions	1:30-3:00 PM	W10-Terrorism: Management of Aerosols and Priority Threats	W11-SYM: Examining the Degree of Risk Protection in Regulatory Risk Assessments	W12-SYM: Chemical Mixtures Health Risk Assessment Methods, Part 2	W13-SYM: Food Safety and Risk Regulation, Part 2
	3:00-3:30 PM 3:30-5:00 PM	Poster Session 3 Topics: Regulatory Policy & Decision Making, Dose Response, Ecological & Environmental Risk <i>Plan on staying for these and you win a T-shirt! You may even win FREE REGISTRATION!</i>			
	3:30-5:00 PM	W19-Modeling for Rare Events and Terrorism	W20-SYM: Cancer/Non-Cancer Harmonization: Use of Mode of Action Data	W21-SYM: Dose Response Relationships from Pharmacodynamic Modeling	W22-Biomonitoring and Dose Reconstruction

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WEDNESDAY	8:00 AM-5:00 PM	Registration	7-8 AM – Exposure Assessment Specialty Group Business Meeting/Breakfast 8 AM <i>SRA Annual Business Meeting</i>		
	8:30-10:00 AM	<i>Plenary Session: Risk Analysis: Creating the Profession</i>			
	10:00-10:30 AM	Poster Session 3 Topics: Regulatory Policy & Decision Making, Dose Response, Ecological & Environmental Risk			
Events	10:00 AM-Noon	Exhibits Open - Ballroom Foyer			
SIERRA	VENTURA	MOJAVE	SAN JACINTO	SANTA ROSA	
W5-Emerging Topics in Risk, Science and Law	W6- SYM : European Exposure Assessment Toolbox, Part 1	W7- SYM : Risk Assessment Applications	W8- PP : Dose Response: Current Concerns and Case Studies	W9-Safety	
<ul style="list-style-type: none"> <i>Can Drinking Water Risk Assessment Approaches be Harmonized? A Case Study with Vinyl Chloride - Chaired by: Harvey Clewell</i> <i>The Benchmark Dose and Risk Assessment - 20 Years Later - Chaired by: Peter Preuss</i> <i>Internationalization at SRA - Chaired by: Jonathan Wiener and Robin Cantor</i> <i>Risk and Culture: Incommensurate Risks and the Regulator's Dilemma - Chaired by: Terre Satterfield</i> 					
W14-Statistical Methods: Uncertainty, Confidence Limits, etc.	W15- SYM : European Exposure Assessment Toolbox, Part 2	W16- SYM : New Challenges and Approaches for Assessing Risk at Radioactive Sites	W17- SYM : Education in Risk Analysis I: World Programs	W18- PP : Health Risk Perception and Communication	
3:00-3:30 PM	Poster Session 3 Topics: Regulatory Policy & Decision Making, Dose Response, Ecological & Environmental Risk				
3:30-5:00 PM	<i>These are the Lottery Sessions. Plan on staying for these and you win a T-shirt! You may even win FREE REGISTRATION!</i>				
W23- SYM : Data Quality in Risk Assessment: The Status of the Practice Today and Into the Future	W24-Exposure in Food and Water	W25-New Methodologies in Risk Management	W26- SYM : Education in Risk Analysis II: Program Content	W27-International Risk Communication/Risk Perception	

Registration Hours

Sunday, December 5	4-7 PM
Monday, December 6	8 AM-5:30 PM
Tuesday, December 7	8 AM-5:30 PM
Wednesday, December 8	8 AM-5 PM

Conference Events

SRA Council Meetings

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

SRA Welcome Reception – (Cash Bar)

Sunday, 12/5 – 5:30–7:00 PM

Luncheons (Dietary Restrictions – Notify Registration Personnel)

Monday and Tuesday luncheons are included in full registration.

Wednesday box lunches will be available for purchase. **Please order on registration form.**

Golf Tournament (All Levels of Play Welcome)

Sunday, 12/5 – 10:15 AM

Cost: \$95 pre-registration (before 11/5) \$125 late registration (after 11/5)

Tee off on one of Palm Springs' most popular playgrounds...the Cimarrón Golf Resort, where the only thing to distract you is the view. Cimarrón Golf Resort features two world-class layouts designed by John Fought. Cimarrón, named after the vibrant purple flower, also means "wild and untamed." Cimarrón strives against the cookie-cutter and condo-lined course characteristics that are predominant in Palm Springs golf. Enhancing the stark beauty of the native desert, Cimarrón utilizes European-style characteristics such as sod-wall bunkers filled with white crushed marble against the creative contouring of the emerald fairways. By combining an imaginative mix of traditional desert golf with the unarguable elements of European links styling reminiscent of old Scotland. . . Cimarrón Stands Alone. Included in this outing are eighteen holes of golf, motorized golf cart, and an awards luncheon following play.

President's Fiesta

Monday, 12/6 – 7:00-10:00 PM

Cost: \$44 pre-registration \$60 late registration (after 11/5) if space available

Join the president and councilors to recognize those who have contributed significantly to SRA during the past year. This evening of Mexican food, music and drinks will take place at Del Rio's on the famous Palm Canyon Way (a short walk from the Wyndham)

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Preliminary Program Subject to Change – Go to www.sra.org for new updates and a complete listing of sessions, presentations and abstracts!!

and will include traditional Mexican fare and all you can drink sodas, beer, wine or Margaritas. Please register early for this event because there are a limited number of tickets available.

Exhibition & Books on Display – Ballroom Foyer

December 6-7	9:45 AM–4:00 PM
December 8	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 or information about displaying a book on our publications table, contact Lori Strong or Sue Burk at SRA Headquarters, (703) 790-1745, email: SRA@BurkInc.com or go to www.sra.org and download the exhibit information.

Travel Program

America West Airlines is offering discounted fares of 5% off most fares (and a 5% bonus discount for tickets purchased 60 days or more prior to travel) for air travel to and from the event. To qualify, call America West Airlines Group and Meetings Reservations at 800-548-7575 and **reference CAMS Code AP6463**. Call between 6:00 am and 6:00 pm, Monday-Friday, Central Time. Or go to americawest.com and enter the **CAMS Code AP6463** into the eCertificate window on the Air Reservation Page. If the ticket is being purchased 60 or more days in advance, enter **AP6463** in the eCertificate window to earn your bonus discount. Dates of availability are November 30, 2004-December 13, 2004.

AVIS Car Rental – Special Rates

Special discounted rates have been arranged with Avis in Palm Springs, Los Angeles, Orange County, San Diego, Ontario, Long Beach available from November 28, 2004 - December 15, 2004.

Special Rates:	DAILY	WEEKLY
Subcompact	\$38.99/day	\$144.99/week
Compact	\$44.99/day	\$159.99/week
Intermediate	\$47.99/day	\$185.99/week
Full Size 4 door	\$53.99/day	\$208.99/week
Premium	\$57.99/day	\$219.99/week
Convertible/SUV	\$63.99/day	\$304.99/week

To book a car, call Avis at 1-800-331-1600 and use AWD code **J901109**. Online car registration will be available as well. Check the SRA meetings website (www.SRA.org) for updates. Note that all fees quoted include unlimited free miles.

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" résumés, 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 at MJohnson@BurkInc.com

The résumé form is also available at www.sra.org in the meetings section. These forms must be submitted no later than **November 5, 2004**. Once these forms are received, a résumé number will be issued. By November 19, 2004, 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.

Workshops — Sunday, December 5

WK1 - 8:00 AM-Noon

Beyond Point Estimates: Risk Assessment Using Interval and Possibilistic Arithmetic. Organizer: Arlin Cooper, 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 quantities, 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 the workshop website www.ramas.com/interval.com.

WK2 - 8:00 AM-Noon

Risk Assessment and Multi-Criteria Decision Analysis: A Framework for Managing Complex Environmental Challenges. Organizer: Igor Linkov, linkov@cambridgeenvironmental.com, Cambridge Environmental

Pre-Registration Fee: \$200, Onsite Registration Fee: \$230

Decision-making in environmental projects is typically a complex and confusing exercise, characterized by trade-offs between socio-political, environmental, and economic impacts. Cost-benefit analyses (CBA) are often used, occasionally in concert with comparative risk assessment, to choose between competing alternatives. However, assessment of remedial, abatement and land-use policies for contaminated sites involves multiple criteria such as cost, benefit, environmental impact, safety, and risk that may not be easily condensed into a single monetary value. Consequently, alternatives or trade-offs may be incomparable on a CBA basis. Even in cases where it is possible to convert multiple criteria into a common single unit, this approach would not always be desirable because competing or mutually exclusive stakeholder group preferences may be lost in the decision process. The overall effect is to foster a defensive decision making culture among government agencies and private firms that may be slow to adopt or test new environmental technologies such as beneficial reuse of contaminated sediments or in-situ treatments. As an alternative to CBA, multi criteria decision analysis (MCDA) and Comparative Risk Assessment (CRA) offer scientific and theoretically sound analytical decision methods. Recent workshops of federal stakeholders (US Army Corps of Engineers, EPA, NOAA) have constructed basic frameworks that are applicable to environmental projects dealing with contaminated and disturbed sites where risk assessment and stakeholder participation are of crucial concern. This workshop will provide an interdisciplinary perspective of CRA and MCDA methods for the assessment of novel contaminated sediment management technologies in the context of public stakeholder values. Participants learn a basic overview of CRA and MCDA techniques and tools with some time allowed for work/consultation on specific issues of concern to participants.

WK3 - 8:00 AM-Noon

Incorporating Genomic Information into Risk Assessment and Policy. Organizer: Elaine Faustman, NLJ@u.washington.edu, University of Washington
Pre-Registration Fee: \$250, On-Site Registration Fee: \$310

This half-day course is designed for risk practitioners who have an interest in the emerging technologies of genomics, proteomics, and metabolomics – increasingly referred to as "Omics." We will provide both a general overview of the science and describe how they are used in toxicology and risk assessment. The course will proceed in five discrete modules:

1 - The Omic Revolution: This will provide background to understand the central paradigm of the connection between DNA, RNA, and proteins in the functioning of cells and organisms. Description of new technologies used to sequence and measure simultaneously tens of thousands of genes, messenger RNAs, and proteins will be used to illustrate how these new tools are providing an unprecedented amount of information about the functioning of living organisms.

2 - The Omic Revolution's impact on Toxicology: The use of new omic tools in toxicology is

providing new ways to understand the impact of environmental exposures of toxicants on living organisms. We will review examples of how these tools are used to understand and define mechanisms of toxicity and susceptibility. We will develop an in depth discussion centering around an example compound, such as metals and pesticides.

3 - Current Applications in Risk Assessment: Examples of how information from new omic tools is being incorporated into both ecological and human health risk assessment. We will give examples of ecological applications for the endangered species act and managing salmon populations. On the human health side we will illustrate an example using metals and pesticides. The importance of understanding the sources of variability in omic tools will be emphasized.

4 - Current Incorporation into Policy: We will look at current policies and practices for incorporating information from omic tools into Risk Assessment at two Federal agencies, the EPA and the FDA.

5 - Future Impacts: We will look at how the use and application of omic tools is evolving. We will outline other possibilities for new uses of this information in regulatory and risk assessment applications.

WK4 - 1:00-5:00PM

Intermediate Topics on Health Risk Assessment of Chemical Mixtures. Organizer: Linda K. Teuschler, teuschler.linda@epa.gov, US EPA

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

This half-day workshop presents intermediate topics and hands-on exercises on risk based methodologies for assessing cumulative health risk from exposure to chemical mixtures, including considerations of multiple route exposures and toxicological interactions. Included are limited descriptions of basic concepts, the introduction of cutting edge chemical mixture health risk assessment risk issues, explanation of state-of-the-art methods, and hands on exercises for two important classes of chemical mixtures (i.e., drinking water disinfection by-products, pesticides). This course targets people with some familiarity with chemical mixtures risk assessment who are interested in stretching beyond simple concepts. For example, interested individuals might include those who have: conducted Superfund/RCRA site assessments, worked on Food Quality Protection Act (1996) issues regarding cumulative risk, studied community based risk assessments of multiple chemicals, applied methods based on additivity concepts (e.g., hazard index, response addition) to simple chemical mixtures, been involved with human or toxicological studies on chemical mixtures, or taken an introductory course in Chemical Mixtures Health Risk Assessment. Participants are asked to bring a calculator. More information will be available through the SRA website www.sra.org.

WK5 - 8:00 AM-5:00PM

What Monte Carlo Cannot Do: An Introduction to Imprecise Probabilities. Organizer: Scott Ferson, scott@ramas.com, Applied Biomathmetics

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

This tutorial introduces the notions of interval-valued probabilities and imprecisely specified probability distributions and their uses in risk analysis. It reviews five practical and quantitative approaches for assessments based on these ideas. Although the five approaches have distinct origins and many important differences, the tutorial emphasizes their commonality of purpose and the similarities of their ideas and methods. These approaches together 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 advantages and disadvantages. 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. This approach provides a convenient way to assess the reliability of fault-tree risk analyses. The concept of interval probability 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 real-world measurements may not allow an analyst to distinguish between similar events by empirical evidence. These approaches are also related to robust Bayes (aka Bayesian sensitivity) methods, in which an analyst can relax the requirement that the prior distribution and the 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 dependencies among variables, non-negligible measurement error or laboratory imprecision, data censoring, and the need for backcalculations in remediation planning. More information about the workshop can be found at the workshop website www.ramas.com/ippalmsprings.htm.

WK6 - 8:00 AM-5:00PM

Recommended Practice Regarding Selection, Application and Interpretation of Sensitivity Analysis Methods Applied to Exposure or Risk Assessment Models. Organizer: H. Christopher Frey, frey@eos.ncsu.edu, North Carolina State University

Pre-Registration Fee: \$295, On-Site Registration Fee: \$355

When should you perform sensitivity analysis? How do you prepare a model to facilitate sensitivity analysis? What are key considerations in the development of scenarios that are the basis for sensitivity analysis? What are some typical sensitivity analysis methods and how can you select among them? How should particular sensitivity analysis methods be applied? How should the results of sensitivity analysis be presented and interpreted? How are the methods applied to exposure or risk assessment model for identifying susceptible subpopulation and important pathways? This workshop will answer these questions. The methods and case studies that will be presented in this workshop are based upon several years of research at NC State University regarding transferring, applying, and adapting sensitivity analysis methods developed in other disciplines (e.g. complex engineering systems) to quantitative exposure and risk assessment models. One of the outcomes of this research is a guidance document regarding selection, application, and interpretation of sensitivity analysis methods applied to quantitative risk assessment models. This workshop helps practitioners in selecting specific sensitivity analysis methods that are relevant to a particular case study and to the characteristics of the model. Practitioners can also use the instructions in the workshop to aid in interpreting results from a sensitivity analysis in response to a particular modeling objective. Workshop participants will be provided with course notes, a copy of the guidance document, and a tutorial with examples for instructing attendees how to perform sensitivity analysis using common sensitivity analysis methods. The methods will also be illustrated with two practical case study examples. This workshop is aimed at practitioners who are already familiar with basic concepts of statistics and probabilistic simulation and who wish to refine their knowledge regarding sensitivity analysis methods.

WK7 – 8:00 AM-5:00PM

Ecological Risk Assessment Methods for Arid Environments. Organizer: *Randall Rytli, rryti@neptuneinc.org, Neptune and Company Inc.*

Pre-Registration Fee: \$300, On-Site Registration Fee: \$360

This course will cover the assessment of ecological effects over multiple scales of biological organization for terrestrial and aquatic species in arid and semiarid environments. Arid and semiarid environments are important, comprising almost one third of the earth's land surface and most of the western and southwestern United States. The evaluation of ecological effects in such environments needs to be technically defensible; a challenging proposal if risk assessment approaches developed for moist habitats are used. For example, standard terrestrial toxicity bioassays are more applicable to mesic sites than arid sites. This full day offering provides an overview of the tools and challenges for performing ecological assessments in arid and semiarid ecosystems and illustrates the overview with examples. To bring a full understanding of ecological effects characterization to the attendees, this course attempts to achieve several major goals: namely, demonstrate the special considerations of arid environments under Superfund's ecological risk assessment (ERA) framework; illustrate conceptual site model and problem formulation development through biotic transport in the desert and bioaccumulation in arid-adapted species; describe how contamination effects in semi-arid soils can be interpreted using standard toxicity tests and using more site-specific biota; consider special needs and management of aquatic resources in arid environments; and, document the strengths and limitations of using arid ecosystem ERAs to support informed environmental decision making in southwestern and western states. This course is specifically designed to enhance the understanding of ERAs that have been or will be conducted in arid environments.

WK8 – 8:00 AM-5:00PM

SRA Reference House Workshop: Residential Exposure Assessment - A Primer. Organizer: *Jeffrey H. Driver, infoscientific@comcast.net, inforscientific.com Inc.*

Pre-Registration Fee: \$320, On-Site Registration Fee: \$380

A one-day workshop based on the text book: *Residential Exposure Assessment: A Sourcebook* (copy provided to participants as part of their tuition) that provides an introduction to residential exposure assessment principles and practices, and identification of key state-of-the-science challenges.

WK9 – 8:00 AM-5:00PM

Introduction to Ecological Benefits Assessment. Organizer: *Nicole Owens, owens.nicole@epa.gov, US EPA*

Pre-Registration: \$175, Onsite: \$235

Participants in this workshop will be introduced to the process of ecological benefits assessment, from problem formulation and conceptual model development to the valuation of ecological changes. An integrated conceptual model for an ecological benefits assessment illustrates how a policy is expected to influence the direct or indirect linkages between human activities, environmental stressors, ecological endpoints, and human well-being. Analysts then use the conceptual model to guide the planning and execution of all stages of a benefits assessment. A number of standard economic valuation methods can be used to estimate values for ecological changes, including travel cost methods,

hedonic methods, production function methods, and stated preference methods. In small groups, participants will collaborate on the development of a conceptual model for one of two illustrative ecological benefits assessment scenarios. This exercise is designed to foster discussion on the application of familiar conceptual modeling techniques to a wider domain: not just impacts on ecological endpoints, but also human behavioral responses to, and values of, those impacts. Participants will also apply three standard economic valuation methods to one or more of the scenarios using hypothetical data and pre-fabricated model estimation routines. These exercises will give participants some hands-on experience with possibly unfamiliar economic valuation methods. The workshop will conclude with a discussion of the concept of "value," the limitations of the current state of the practice of ecological benefits assessment, and the role of economics in ecological risk assessment.

WK10 – 8:00 AM-5:00PM

Risk Assessment for Microbial Hazards: An Introduction and Case Studies in Food and Water Safety and Animal and Plant Health. Organizer: *Emma Hartnett, ehartnett@decisionanalysis.com, Decision Analysis Risk Consultants, Inc.*

Pre-Registration Fee: \$295, On-Site Registration Fee: \$355

The adoption of risk assessment as a decision-support tool continues to increase around the world. An area of noticeable growth in the implementation of risk assessment tools is to tackle food safety, water quality, animal and plant health risks, and related international trade matters. This full day workshop will introduce participants to the principles, application and interpretation of risk assessment in the microbial (both food and water issues), antimicrobial, animal and plant health domains. The workshop will consist of two sessions. In the morning, participants will gain a basis for an improved understanding of what risk assessment entails, and how to read and interpret the results through a series of lectures. Topics covered will include the following key areas: 1) an introduction to the terminology, concepts, tools and techniques used in risk assessment, particularly in the food and agriculture arenas 2) an overview of key methods applied in developing qualitative and quantitative risk assessments 3) the basic principles of quantitative risk assessment and monte-carlo simulation and some alternatives The afternoon will consist of presentations from international speakers invited to present and discuss examples of risk assessments across a variety of applications. Speakers will specifically address risk assessments developed for microbial food-related, microbial water-related, antimicrobial, animal health and plant health issues, presenting an overview of the approach taken, key findings and lessons learned. This, to our knowledge, would be one of the first times that such a broad spectrum of applications of risk assessment has been presented in a single workshop. These presentations will provide participants with an appreciation for risk assessment in practice, and the diversity of microbial applications utilized in supporting human, animal and plant disease control and the corresponding international trade related decisions around the world.

SRA Hotel Reservation Form

Wyndham Palm Springs
888 East Tahquitz Canyon Way
Palm Springs, CA 92262

Phone: 760-322-6000; FAX: 760-416-2900

Web Reservations: <http://www.wyndham.com/groupevents/113SocietyForRiskAnalysis/main.wnt>

\$129.00 single/double

Reservation Deadline: NOVEMBER 5, 2004

- ◆ Reservations received after November 5, 2004 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 5, 2004 with one of the following:
 - An enclosed check or money order covering the first night's stay to include 12.55% city tax and \$.89 utility fee per room, per night.
 - 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 Wyndham Palm Springs, 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 _____

Wyndham By Request Number: _____

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



Society for Risk Analysis — Registration Form

December 5-8, 2004

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

Member # SRA _____
PLEASE PRINT CLEARLY

Preregistration Deadline: Friday, November 5

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: _____

SPECIALTIES: (YOU MAY CHOOSE A MAXIMUM OF 3)

- (30) Dose Response (31) Ecological Risk Assessment (32) Economics and Benefit Analysis
- (33) Engineering (34) Exposure Assessment (35) Food Safety Risk Assessment
- (36) Risk Communication (37) Risk Science & Law (38) Other _____

EMPLOYMENT (CHOOSE ONE)

- (90) Government (91) Industrial (92) Medical (93) National Laboratory
- (94) University (95) Other _____ (96) Private Practice (97) Military

DISCIPLINE (CHOOSE ONE) HIGHEST DEGREE

- (60) Economics (61) Engineering (62) Environmental Sciences (63) Law and Policy
- (64) Philosophy (65) Psychology/Sociology (66) Public Health Sciences (67) Other: _____

FEES

- Continuing Member* \$490.00
- Member (*Available to SRA members who have paid their 2004 dues only*) \$385.00
- Non-Member** \$55.00
- Student \$105.00

WEDNESDAY BOX LUNCH

- Turkey Ham Vegetarian \$ 20.00

WORKSHOPS – SUNDAY, DECEMBER 5

- WK1-AM (Cooper) \$175.00
- WK2-AM (Linkov) \$200.00
- WK3-AM (Faustman) \$250.00
- WK4-PM (Teuschler) \$249.00
- WK5-All Day (Ferson) \$175.00
- WK6-All Day (Frey) \$295.00
- WK7-All Day (Ryti) \$300.00
- WK8-All Day (Driver) \$320.00
- WK9-All Day (Owens) \$175.00
- WK10-All Day (Hartnett) \$295.00

SPECIAL EVENTS

- Golf Tournament (Sunday) \$95.00
- Presidents Reception (Monday) \$44.00

Total _____

*Includes Meeting Registration and 2005 Membership Dues.; **Includes a 1 year SRA Membership for 2005

PAYMENT (please indicate method of payment)

- Check # _____ Purchase Order # _____ VISA MasterCard American Express Discover

Card # _____ 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

All cancellations are subject to a \$50 service charge. Cancellations must be in writing to the SRA Secretariat. Cancellation letters received by November 5 will be refunded registration fees minus the \$50 service charge after the meeting. No refunds will be issued on cancellations received after November 5.

Society for Risk Analysis

1313 Dolley Madison Blvd.

Suite 402

McLean, VA 22101

2004 Annual Meeting Program Committee

Gail Charnley & Steve Lewis, Co-Chairs

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Cynthia Mann

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