

# Probabilistic Risk Assessment

Current Developments and Applications of Environmental Assessment and Management

Society for Risk Analysis and Interstate Technology Regulatory Council Workshop  
28–31 March 2005, Henry Center, Michigan State University, East Lansing, Michigan

## Lectures and Presentations

### **Topic 1: Probabilistic Risk Assessment Methods and Tools**

Scott Ferson (Applied Biomathematics): [Overview of Monte Carlo methods Bounding Probability](#)

Igor Linkov (Cambridge Environmental): [From Deterministic to Probabilistic RA](#)

### **Topic 2: Regulatory basis for PRA (0.5 hrs)**

Ted Simon (US EPA): [PRA Guidance for Superfund and its Implementation](#)

### **Topic 3: PRA use in Human Health Risk Assessment: Case Studies**

Annie Jarabek (CIIT / US EPA): [Use of PRA in HH Risk Assessment](#)

William Wright (Montgomery Watson): [Probabilistic toxicity assessment: Development of Human Subacute Oral Reference Doses for Selenium](#)

Edmund Crouch (Cambridge Environmental): [Probabilistic Evaluation of Dose-Response Relationship for PCBs](#)

Ewen Todd (Michigan State University): [Use of PRA Is Driving Policy Issues in Reducing Foodborne Diseases](#)

### **Topic 4: PRA Use in Ecological Risk Assessment: Case Studies (1.5 hrs)**

John Kern (Kern Statistical Services): [Statistical aspects of Exposure Modeling and Impact Assessment](#)

Jeff Steevens (US Army Corps of Engineers): [Use of PRA Approaches for Developing Fish Tissue and Sediment Benchmarks](#)

William Wright (Montgomery Watson): [PRA Applications in Ecological Risk Assessment at Population-, Community-, and Landscape-levels](#)

### **Topic 5: From PRA to Decision Analysis and Environmental Management**

Lee Poe (ITRC): [Communicating Results of PRAs to Stakeholders](#)

### **Topic 6: PRA Hands-on Training**

Phil Goodrum (SRC) and Ted Simon (US EPA<sup>1</sup>): T

**Why Use Probabilistic Models?**

**How Monte Carlo Analysis Works**

**Selecting and Parameterizing Distributions**

**Nuts and Bolts of Monte Carlo Modeling**

**1-D Monte Carlo Analysis**

**Monte Carlo Analysis as a Tool for Characterizing Uncertainty**

**2-D Monte Carlo Analysis**

**Exposure Point Concentration**

**PRA and Toxicity**

**Putting it All Together**

**Presentations by Workshop Participants / Discussion (2 hrs)**

- T. Hall and T. Murphy (US EPA): [PRA in the proposed Long Term Enhanced Surface Water Treatment Rule](#)
- C. Kirman and T. Long (Sapphire Group): [A Probabilistic Assessment of Cancer Risk in Creosote Workers.](#)
- D. Goswami (Washington State Department of Ecology): [Conceptual Model Development for the Sitewide Risk and Impact Assessment of the Hanford Site Contamination Using a Holistic System Approach](#)
- D. Delisrati and E. Rochette: [PRA Aspects of the Columbia River Comprehensive Impact Assessment \(CRCIA\)](#)
- B. Landenberger (Dow Chemical) "[PRA: A tool to expand understanding](#)"
- A. Fristachi (US EPA) "[Estimation of the Total Daily Oral Intake of N-Nitrosodimethylamine \(NDMA\) Attributable to Drinking Water](#)"

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<sup>1</sup> The work presented by Ted Simon was performed in his private capacity and does not reflect the policies or views of the Environmental Protection Agency or any other agency of the Federal Government.