



NNI Capstone Workshop:  
*Risk Management Methods &  
Societal, Ethical, and Legal Implications of Nanotechnology*

March 30-31, 2010–Holiday Inn Rosslyn at Key Bridge  
1900 North Fort Myer Drive, Arlington, VA • (703) 807-2000  
Metro: Blue or Orange line to Rosslyn Station  
[www.nano.gov/html/meetings/capstone/](http://www.nano.gov/html/meetings/capstone/)

## AGENDA

### Tuesday, March 30, 2010

#### PROMENADE

7:30 a.m. Registration and continental breakfast

#### ROSSLYN BALLROOM

8:30 Welcome  
*Clayton Teague, National Nanotechnology Coordination Office*

8:50 Workshop Scope and Goals & Charge to Participants  
*Jeff Morris, EPA*  
*Carlos Peña, FDA*

9:30 Two Risk Management Methods (RMM) Perspectives: Where we are? Where do we need to go?  
Introduction  
*Igor Linkov, US Army ERDC*  
  
*Gary Marchant, Arizona State University*  
*Greg Lowry, Carnegie Mellon University*

10:30 Break

10:45 Two Ethical, Legal, and Societal (ELSI) Perspectives: What is ELSI? How does ELSI apply to nanotechnology?  
Introduction  
*Mark Frankel, AAAS*  
  
*Pilar Ossorio, University of Wisconsin Law School*  
*Barbara Herr Harthorn, University of California, Santa Barbara*

11:45 Case Scenario: Breakout Discussions at Tables  
Introduction  
*Amy Jones, Lockheed Martin*  
  
Discussion at tables among members  
Facilitators  
*Mark Frankel, AAAS*  
*Michael Hansen, Consumers Union*  
*Igor Linkov, US Army Engineer Research and Development Center*  
*Jeff Morris, EPA*  
*Carlos Peña, FDA*  
*Dietram Scheufele, University of Wisconsin, Madison*



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12:30 Lunch (on your own - see packet for nearby eateries)

*Please see Registration table for location of your breakout session*

1:45 Concurrent Breakout Sessions

- Session 1 Nanotechnology: Risk Management and the Workplace  
*Frank Mirer, Hunter College, and Charles Geraci, NIOSH*  
Subject matter experts: *Christopher Bell, Sidley Austin, Robert Blaunstein, Nanotech Risk Management and Jeff Steevens, DOD*
- Session 2 Nanotechnology: Risk Management and Product/Material Lifecycle  
*Tom Seager, Rochester Institute of Technology, and Igor Linkov, US Army Engineer Research and Development Center*  
Subject matter experts: *Jackie Isaacs, Northeastern U. and George Kimbrell, ICTA*
- Session 3 Nanotechnology: Risk Characterization Information  
*Michael Hansen, Consumers Union, and Robert Bronaugh, FDA*  
Subject matter experts: *Vince Castranova, NIOSH, Carlos Peña, FDA and Stacey Harper, ONAMI*
- Session 4 Ethical, Legal, and Societal Implications: What are attitudes about nanotechnology and how are they formed?  
*Elizabeth Corley, Arizona State University, and Sally Tinkle, NIH/NIEHS*  
Subject matter expert: *Jennifer Kuzma, University of Minnesota*
- Session 5 Nanotechnology: ELSI and RMM Communications  
*Dietram Scheufele, University of Wisconsin and Matt Nisbet, American University*  
Subject matter expert: *Amy Wolfe, Oak Ridge National Lab*
- ★ Session 6 Specific ELSI of Nanotechnology Issues  
*Mark Frankel, AAAS, and Pilar Ossorio, University of Wisconsin, Madison*  
Subject matter experts: *Christopher Bosso, Northeastern University, Pat Casano, GE, Alta Charo, FDA, and John Stone, Michigan State University*

3:45 Break



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**ROSSLYN BALLROOM**

- 4:00**      *White House Perspective*  
*Tom Kalil, White House Office of Science & Technology Policy*
- 5:00**      *Closing Remarks*  
*Jeff Morris, EPA*

**Wednesday, March 31, 2010**

**PROMENADE**

- 7:30 a.m.**      *Registration and continental breakfast*

**ROSSLYN BALLROOM**

- 8:00**      *Welcome Back*  
*Carlos Peña, FDA*
- 8:15**      *Report Out from Tuesday's Breakout Sessions*  
*Introduction*  
*Robert Bronaugh, FDA*
- Frank Mirer, Tom Seager, Michael Hansen, Elizabeth Corley, Dietram Scheufele,  
Mark Frankel*
- 9:15**      *Case Scenario: Bringing Risk Management and ELSI Together*  
*Introduction*  
*Amy Jones, Lockheed Martin*
- Panel*  
*Steve Brown, Intel*  
*Carolyn Cairns, Consumers Union*  
*John Monica, Porter, Wright, Arthur & Morris*  
*Thomas Seager, Rochester Institute of Technology*
- 10:00**      *Break*



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10:15

**Risk Management and ELSI Information Needs**

Breakout Discussions at Tables

Introduction

*Michael Hansen*

- How would you address the case scenario?
- What information do you need to address the case scenario?
- Are there gaps? What recommendations would you make about information needs?
- Where do Risk Management and ELSI intersect?

11:15

**Breakout Reports from Audience**

Key Themes from Case Scenario and Intersections Between Risk Management and ELSI

Moderator

*Michael Hansen*

*(A volunteer from each table to present no more than 5 minutes of remarks summarizing the table's discussion.)*

11:45

**Public Comments**

Moderator

*William Kojola, AFL-CIO*

12:00

**Working Luncheon**

Presentations on outcomes from previous nanoEHS workshops:

Introduction

*Sally Tinkle, NIH/NIEHS*

**Human and Environmental Exposure Assessment**

*Charles Geraci, NIOSH, planning team member*

**Nanomaterials and the Environment & Instrumentation, Metrology, and Analytical Methods**

*Rebecca Klaper, Great Lakes WATER Institute, planning team member*



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**Nanomaterials and Human Health & Instrumentation, Metrology, and Analytical Methods**

*Charles Gause, Luna Innovations, planning team member*

**1:30**

**Challenges for Nanotechnology and Nanomaterials**

- How can we make sure the NNI Environmental Health and Safety (EHS) Research Strategy communicates the status and research needs for effective Risk Management Methods to all stakeholders (e.g., public, Federal Government, regulated industry, academia)?
- How can we ensure ELSI considerations are included in the next generation of the EHS research strategy?
- What additional information should the Federal Government take into consideration when it updates its EHS Research Strategy?

Moderator

*Dietram Scheufele*

**Risk Management Methods**

*Frank Mirer, Thomas Seager, Michael Hansen*

**Ethical, Legal, and Societal Implications of Nanotechnology**

*Elizabeth Corley, Dietram Scheufele, Mark Frankel*

**2:30**

**Grand Challenges for nanoEHS Research Panel**

Moderators

*Charles Geraci, NIOSH and Treye Thomas, CPSC, Co-chair, Nanotechnology Environmental and Health Implications (NEHI) Working Group*

*Panel/Presentations (20 minutes)*

*Open Discussion (40 minutes) for all workshop participants  
(Please use the microphones provided for making your remarks.)*

**3:30**

**Next Steps & Final Thoughts**

*Jeff Morris, EPA*

*Carlos Peña, FDA*



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## Invited Experts

### David Andrews, Environmental Working Group

Christopher Bell, Sidley Austin LLP  
Rosalyne Berne, University of Virginia  
Robert Blaunstein, Nanotech Risk Management  
Christopher Bosso, Northeastern University  
Steve Brown, Intel

### Carolyn Cairns, Consumers Union

Pat Casano, GE

### David Castner, University of Washington

Vince Castranova, NIOSH  
Alta Charo, FDA  
Elizabeth Corley, Arizona State University

### John Cowie, American Forest & Paper Association

### John Gannon, DuPont

Charles Gause, Luna Innovations  
Stacey Harper, ONAMI  
Barbara Herr-Harthorn, UC, Santa Barbara  
John Howard, NIOSH  
Jackie Isaacs, Northeastern University  
Tom Kalil, OSTP  
George Kimbrell, ICTA

### Rebecca Klaper, Great Lakes WATER Institute

### William Kojola, AFL-CIO

Kristen Kulinowski, Rice University  
Jennifer Kuzma, University of Minnesota  
Greg Lowry, Carnegie Mellon University  
Gary Marchant, Arizona State University  
John Monica, Porter, Wright, Arthur & Morris

Matthew Nisbet, American University  
Pilar Ossorio, University of Wisconsin Law School  
Thomas Seager, Rochester Institute of Technology  
Jeff Steevens, DOD  
John Stone, Michigan State University  
Trey Thomas, CPSC  
Amy Wolfe, Oak Ridge National Lab

## Planning Team Members

### Risk Management

Robert Bronaugh, FDA  
Michael Hansen, Consumers Union  
Amy Jones, Lockheed Martin  
Igor Linkov, US Army Engineer Research and  
Development Center  
Franklin Mirer, Hunter College  
Carlos Peña, FDA

### Sally Tinkle, NIH/NIEHS

### Ethical, Legal and Societal Implications of Nanomanufacturing

Mark Frankel, AAAS  
Charles Geraci, NIOSH  
Martha Marrapese, Keller and Heckman  
Jeff Morris, EPA  
Dietram Scheufele, University of Wisconsin,  
Madison

- Member of planning team, Human and Environmental Exposure Assessment Workshop, February 2009
- Member of planning team, Nanomaterials and the Environment & Instrumentation, Metrology, and Analytical Methods, October 2009
- Member of planning team, Nanomaterials and Human Health & Instrumentation, Metrology, and Analytical Methods, November 2009