ICON International NanoEHS Research Needs Assessment I
9 Jan 2007
Acknowledgments

Workshop Steering Team

- **Mike Garner**
- Cate Alexander
- David Berube
- Vicki Colvin
- Scott Cumberland
- Tracy Hester
- Dave Johnson
- Andrew Maynard
- Gunter Oberdörster
- Jennifer Sass
- Hideo Shindo
- Vicki Stone
- Sally Tinkle

Funding provided by

[Logo] International Council on Nanotechnology

[Logo] NSF

BES-0646107
# Workshop Agenda—Day One

<table>
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ICON Foundations: Nanotech Research

2001: National Science Foundation funds Center for Biological and Environmental Nanotechnology at Rice University

2001-now: CBEN becomes leader in health and environmental nanotech research

2004: CBEN launches the International Council on Nanotechnology
CBEN: Investigating Nano Impacts since 2001

CBEN’s Mission: To create sustainable nanotechnologies that improve human health and the environment

Theme 1: Nanoscience at the Wet/Dry Interface

Theme 2: Nanoparticles for Bioengineering

Theme 3: Nanoparticles & Environmental Engineering

Addressing applications and implications
Research Center Engages in Broad Outreach

Partnerships

- Industry
- NGO’S
- CBEN (Research Center)
- Gov Labs
- Natl User Facilities

Outreach

- Commercialization
- Workshops
- Education
- Other activities

Ensure that the research has an impact beyond center boundaries
Developing and communicating information regarding potential environmental and health risks of nanotechnology to foster risk reduction and maximize societal benefit.
All stakeholders communicate and cooperate in nanotechnology EHS

A global perspective on the potential risks of nanotechnology

Developing and communicating information regarding potential environmental and health risks of nanotechnology to foster risk reduction and maximize societal benefit.

High quality technical information and knowledge for all levels

Stewardship for sustainable nanotechnology
Information Underpins all ICON Activities

RESEARCH
Creation of new information

Validate

Present

Critique

Inform

Collect

Filter

Organize

Explain

Summarize

Educate

Synthesize

Debate

Compare

Frame

Decide
Write a policy position

Research needs

EHS Knowledge Database

Best Practices Manual

V. Colvin
Working Groups Advance ICON Projects

Knowledge Base
- EHS Database: [http://icon.rice.edu/research.cfm](http://icon.rice.edu/research.cfm)
  - Backgrounders
  - NanoEHS Research Needs Assessment

Best Practices
- Survey of existing practices for risk management
- Development of consensus standards

Communication
- Public Portal
  - Media Alert Initiative
  - ICONsultations

Planning (Internal)
- Transparency
- Balance among stakeholders
Quality Information about Risks & Benefits

Knowledge Base WG

- Database of EHS technical papers
  - Standards
  - Nanoparticles in academic research
  - Nanoparticles in commerce
  - Known hazard factors
  - Production Volumes
  - Modeling
  - Metrology
  - Available EHS data

Workshop 1: Create a matrix of material class, interaction principles, risk factors

Workshop 2: Develop International Research Needs Assessment

Best Practices WG

- Survey of current workplace practices

Communications WG

- ICONsultations with diverse stakeholders

International nanoEHS research needs assessment

ICON Working Groups
What is known about nanoparticle environmental health and safety?

- Fully searchable
- Regularly updated – Over 1600 records
- Free to public
- Accessed by people around the world

Database of citations to peer-reviewed nanoEHS papers
Survey of Current Handling Practices

- October 2006: Catalogue activities to develop best practices
- November 2006: Survey of current practices for handling nanomaterials in the workplace

Ultimate Goal: From current practices to best practices
Key Findings from the ICON Survey

• Many organizations display active interest in additional information on how best to handle nanomaterials

• Lack of information and guidance are the main reported impediments to further developing and implementing nano-specific EHS programs.

• Most pressing need is for research on toxicology, hazards and safe handling methods for nanomaterials
NanoEHS Research Needs Assessment

Building on previous work:
• International
• Prioritized
• Inclusive of multiple perspectives
• Adaptive
• Reflective of materials in commerce and on the horizon
NanoEHS Research Needs Assessment

Goal

• The ultimate goal of this project is to prioritize research needed to establish a science-based assessment of potential risk of different classes of nanomaterials (both current & emerging) and to validate the classes of nanomaterials and the principles that relate properties to predicted risk factors.

• Workshop 1: Material Properties & “Hot Spots”
• Workshop 2: Research Needs & Priorities (Toxicology, Toxicokinetics, etc.)
Ground Rules for the Workshop

• Be respectful of other people’s perspectives. Don’t dominate the discussion.

• Speak on behalf of yourself, not necessarily your organization.

• If you speak to the press or publish about the workshop, do not characterize the remarks or perspectives of other individuals without their permission.
Outcome of Workshop 1

Post-meeting:
Draft Workshop1 Summary

Participants

Final Workshop 1 Report

Workshop 2
~May 2007
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