Draft Ideas for Discussion
December 2, 2013

Cross-COR Information Flow

Please address comments to:

Mark D. Hoover, PhD, CHP, CIH
304-285-6374
mark.hoover@cdc.hhs.gov
National Institute for Occupational Safety and Health
Morgantown, West Virginia

The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of the National Institute for Occupational Safety and Health. Mention of company names or products does not constitute endorsement by NIOSH.
# COR Breakout Sessions Today

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
<th>Co-Chairs</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30</td>
<td><strong>Database COR</strong></td>
<td>Stafford I Room 375</td>
<td>Nathan Baker, Rick Canady, Hubert Rauscher</td>
<td>Mark Hoover, Carsten Mohlmann, Alex Tropsha, Egon Willighagen</td>
</tr>
<tr>
<td></td>
<td><strong>Exposure COR</strong></td>
<td>Stafford I Room 380</td>
<td>Rick Canady &amp; Martie van Tongeren</td>
<td>Jean-Yves Bottero, Danielle DeVoney, Denise Mitran, Martie van Tongeren</td>
</tr>
<tr>
<td></td>
<td><strong>Modeling for Human Health COR</strong></td>
<td>Stafford I Room 365</td>
<td>Bengt Fadeel</td>
<td>Francesco Falciani, Robert Rallo, Anna Shvedova, Brian Thrall</td>
</tr>
<tr>
<td></td>
<td><strong>Ecotox. Testing COR</strong></td>
<td>Stafford II Room 585</td>
<td>Richard Handy &amp; Steve Klaine</td>
<td>Richard Handy Panelists: Teresa Fernandes, Richard Handy, Steve Klaine, Elijah Peterson, Henriette Selck, Claus Svendsen, Jim Ranville</td>
</tr>
<tr>
<td></td>
<td><strong>Risk Assessment COR</strong></td>
<td>Stafford II Room 575</td>
<td>Derk Brouwer &amp; Mark Wiesner</td>
<td>Christine Hendren, Janeck Scott-Fordsmand, Lang Tran, Mark Wiesner</td>
</tr>
<tr>
<td></td>
<td><strong>Risk Management &amp; Control COR</strong></td>
<td>Stafford II Room 595</td>
<td>Keld Alstrup Jensen &amp; Larry Gibbs</td>
<td>Don Ewert, Ilise Feitshans, Chuck Geraci</td>
</tr>
</tbody>
</table>

**Coffee Break**

3:00 – 3:15

4:00

**Joint Database/Exposure COR**
Stafford I Room 375
Co-Chairs: Nathan Baker, Rick Canady, Hubert Rauscher, Martie van Tongeren
Interrelationships of criteria for responsible development of nanotechnology

Figure 1. Interrelation of criteria for responsible development
Proposed Graphical Representations of the US-EU Communities of Research: An Information-to-Action Continuum

The following graphics are intended to illustrate how the CoRs can ideally link and feed one another through an idealized information-to-action continuum.

Although a number of simplifications are in play, notably the role of "ontologies and databases" as the supporting and unifying foundation of an "information pyramid", it is hoped that these images of the proposed continuum will help clarify and guide the cohesive development and implementation of comprehensive and effective CoR activities.

The proposed graphics were created, in particular, to help define the role of the Risk Assessment CoR. Using the concept that “exposure x hazard = risk”, the Risk Assessment CoR is working to determine the best ways to organize and analyze exposure and hazard data to create meaningful risk forecasts that will support sound decision-making.

Draft for discussion
Draw on emerging and increasingly organized data sources to model potential exposure, transformation, biouptake, and ecological and human health impacts.

Subsume and organize all emerging nanomaterial data and metadata to provide hazard and exposure modelers with rich, integrated data sets.

Synthesize hazard and exposure research, filter and interpret to arrive at risk forecasts of ENMs.

Use risk assessment input to weigh trade-offs in context of alternatives and take action to minimize risks.

Idealized Information-to-Action Continuum
Use risk assessment input to weigh trade-offs in context of alternatives and take action to minimize risks.

Synthesize hazard and exposure research, filter and interpret to arrive at risk forecasts of ENMs.

Draw on emerging and increasingly organized data sources to model potential exposure, transformation, biouptake, and ecological and human health impacts.

Subsume and organize all emerging nanomaterial data and metadata to provide hazard and exposure modelers with rich, integrated data sets.

Idealized Information-to-Action Continuum: \( \text{exposure} \times \text{hazard} = \text{risk} \)
Idealized Information-to-Action Continuum: \( \text{property} \times \text{incorporation} = \text{performance} \)

- Use performance input to weigh trade-offs in context of alternatives and take action to minimize risks.
- Synthesize property and incorporation research to interpret to arrive at performance of ENMs.
- Draw on emerging and increasingly organized data sources to model potential properties and how to incorporate them to provide desired performance.
- Subsume and organize all emerging nanomaterial data and metadata to provide hazard and exposure modelers with rich, integrated data sets.
The current horizontal information-to-action continuum fails to efficiently organize and deliver emerging nanotechnology data and information among the CoRs.

Implementation of the idealized information-to-action continuum will optimize CoR roles and communication pathways to:

• support the development of relevant models of exposure and hazard potential,
• synthesize exposure and hazard potentials into assessments of risk, and
• translate the results of assessments into effective decision-making for risk management.
Nanoinformatics  
(a working definition)

• The **science and practice** of determining **which information is relevant** to the nanoscale science and engineering community,

• and then developing and implementing effective mechanisms

• for **collecting, validating, storing, sharing, analyzing, modeling, and applying** that information.

From The Nanoinformatics 2020 Roadmap 
http://www.internano.org/nanoinformatics/
OVERALL OBJECTIVE

Build and sustain
a total culture
of
safety, health, well-being, and productivity
A Key Concept

• The *method* is not the message; [the message] is in the
  *managerial frame of mind*
determined to make *robust decisions.*

Essential factors to build and sustain safety, health, well-being, and productivity

A management view for possible application in our mission
Systems are essential to building and sustaining safety, health, well-being, and productivity. Our mission will collapse and fail without them.
Leaders are essential to building and sustaining safety, health, well-being, and productivity

Our mission will collapse and fail without them.
Cultures are essential to building and sustaining safety, health, well-being, and productivity.

Our mission will collapse and fail without them.
Four Steps for Community Action to build and sustain a total culture of safety, health, well-being, and productivity

• Engage the community
• Inform the interested
• Reward the responsive
• Understand and incentivize the reluctant

Adapted from our Nanoinformatics 2020 Roadmap
Four Steps for Community Action
to build and sustain a total culture
of safety, health, well-being, and productivity

Leaders                    Systems                    Cultures

Engage the community
Inform the interested
Reward the responsive
Understand and incentivize the reluctant

Adapted from our Nanoinformatics 2020 Roadmap
Engage the community

Questions and Discussion

Adapted from our Nanoinformatics 2020 Roadmap