Community of Research for Exposure through Product Life

Co-Chairs

• Richard Canady, ILSI Research Foundation, Washington, DC, USA
• Martie van Tongeren, IOM, Edinburgh, UK
Plan to initiate the CoR
(proposed at 2012 EU-US CoR workshop in Helsinki)

• Provide an online platform for sharing information about
  – Research projects
  – Methods
  – Funding opportunities

• Convene experts on topics within the theme, to
  – Build collaborations
  – Share emerging findings
  – Build knowledge
Why is it hard to select methods?

• Detection, characterization, and risk evaluation of nanomaterials can be highly **context dependent**
  – *Form in composites, release mechanism, media, concentration, etc.*

• Choice of methods depends on the goal of the measurement

• There are few standard methods (??)
  – So everyone chooses their own path, leading to chaotic data from a risk assessor’s perspective
Specific proposal at Helsinki:

Develop a resource to share information and convene experts about methods to measure at specific life cycle stages.

Addressing this need is critical to understanding real risk of ENP.

Needs as of Helsinki:

- Data generation and database maintenance
  - Who hosts, pays, maintains?
  - How to coordinate with other CoRs?
  - How do we promote efficient gathering and availability?
- Data sets and experts
  - What kinds of data and experts are needed, where are they, how do we get access?
  - Structural components of the data sets – what elements are needed
Progress

• Draft by Kim Guzman (RTI International)
  – To provide a platform to share measurement and analytical methods
  – Facilitate communication between groups/projects
  – Application of ontology and user friendly web portal

• Identifying initial candidate data bases
  – Nanomaterial Registry (mainly US) / NanoHub (mainly EU)
Exposure breakout session

• **Goal:** Help us fill in the proposal by
  – Making it realistic so that is useful soon
  – Finding partners and data sets to make it happen

• **Process:** Answer the charge questions
  – What does the risk assessor need to assess a spill?
  – What does a methods developer have to offer the risk assessor now?
  – What data structures, tools and approaches are available to take advantage of
  – What is the best path forward to helping the risk assessor?
Joint Database & Exposure section

The breakout questions are:

Can the risk assessor and the researcher find useful information for their needs above in an existing database (other than a general literature search)?

What is a logical path to developing such a database (or user interface)?
Joint session with Database CoR

• Discussion around a scenario of a spill with ENMs
• Risk assessor gets a call on Friday night
Discussion

• Database or market place of measurement and analytical methods
• Context is important. Framing
• Decision trees, flows, procedures
• Issues around methods (between lab differences; sampling methods)
• Make use of existing resources for emergency responses
• Modify / add to existing procedures
• ..................
Exposure through Product Life

Danielle Devoney, a risk assessor with the US Environmental Protection Agency

The breakout question is:

What are your decision needs when (in the next 6 months) you are told of a nano material release in the environment near a population, and what data or methods do you need to address them?
Site Risk Assessment:

- What is the nature and extent of contamination?
- What are the environmental levels?
- Are there exposure pathways to human or ecological receptors?
- What are the expected/likely exposure levels?
- Are health effects likely at the expected exposure levels?
Possible Considerations

• Develop analytical methods for environmental media which provide metric consistent with health effects data.

• Alternatively – use environmental analytical methods on representative health studies to provide the data for association of the health effects to metrics appropriate for environmental samples.

• As health effects data evolve, evaluate analytical sensitivity to ensure detection of nanomaterials in the environment is adequate to support risk assessment.
Possible Considerations

• Where surrogates or markers are used to measure nanomaterials, consider interference from environmental matrices.

• Where possible define the physical characteristic of the nanomaterial which results in the biological activity/health effect and quantify the exposures in a relevant manner (determinates of toxicity).
Exposure measurement methods section

The breakout question is:

How would you answer a request from a risk manager at a company to demonstrate that a release from their facility is not a risk to human health?

Denise Mitrano (EMPA)
- NANOMILE project
  - release from consumer products/weathering

Jean Yves Bottero (CEREGE)
- SERANADE
  - release/weathering
Summary

• Both presentation addressed release, transformation and aging

• Main conclusions
  – Complexity
  – Release/transformation/fate processes are scenario dependent
Structure of database/market place

• Decision tree, based on Scenario
  – ENMs
  – Product
  – Activity
  – Environment
  – Concern

• Resource on available measurement and analytical methods
  – Advantages & Limitations

• Measurement strategies

• Interpretation