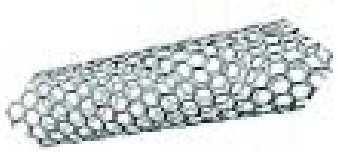
A Joint Workshop 2012



eu-us
bridging nanoEHS research efforts

25-26 OCTOBER 2012, HELSINKI, FINLAND

Exotoxicology, Environmental Chemistry, Material Characterization and Predictive Models

Workshop Report

Objectives of the session

- Refine CoR scope (if necessary)
- Finalize Steering committee
- How to involve and activate scientists from EU an US in CoR work
- Plan for mooving ahead (e.g., sub-topics / research needs)
  - Develop list of sub-topics/research needs to serve as focal point of future discussions
- Meetings: frequency & form(s)
- Knowledge transfer among sub-groups

- Main issues discussed (continues)
  - ➢Refine CoR scope (if necessary)
    - To engage the scientific communities in Europe and the US currently conducting environmental research on nanomaterials, to connect similar efforts, and
    - To encourage the evolution of hazard assessment methods and predictive models (future coordination w CoR3) built on
      - the foundations of fundamental research characterizing fate (including ageing) of nanomaterials in different environmental compartments and the interactions of nanomaterials with biota and ecosystems. *Coordination with CoR1*
      - communication among regulators, experimentalists, modellers (e.g., to make data available / useful data format) to help modellers, experimentalists and risk assessors – *coordination w CoR 5*

- Main issues discussed (continues)

  ➢Finalize Steering committee

  H Selck, Steve Klaine, Teresa Fernandes, Richard Handy, Fred Klaessig, (Jukka A.)

  Suggestion: 8 people covering academia, industry and government

  Timeline: 3 month

- Main issues discussed (continues)

➢ How to involve and activate scientists from EU an US in CoR work

➢ Platform for exchange of knowledge: Both positive / negative data

➢ Meetings: Bamf, SETAC (nano-AG): Steering Committee (continous)

➢ Existing networks: NanoCluster, American Chemcal Society (Alex)

➢ Invitations to 'weekly' tele calls of 1 hour (eg Nathan Baker): Need one permanent organizer (Fred – 3 mo)

➢ Discussion fora: Twitter? / moodle (Jacques – initial steps at this meeting / infastructure? / support? / how to engage people – protection of data etc etc)

- Main issues discussed (continues)

  - Plan for mooving ahead (e.g., sub-topics / research needs)
    - Research needs
    - Develop list of sub-topics/research needs to serve as focal point of future discussions

Research needs – Ecotoxicology

Status:

- How engineered NMs behave and how they interact with biota is poorly understood

Need:

- Validated bioassays, hazard assessment tools and predictive models to be developed and tested for NMs
- Fundamental research: to assess consequences of interactions of NMs with biota governing:
  - bioavailability,
  - bioaccumulation,
  - internal deposition, and
  - deleterious effects.

Research needs – Env. chemistry & characterization

Need:

- understand the influence of NM characteristics on processes incl: environmental fate, bioavailability, bioaccumulation, internal deposition, and effects.
- standardize testing methods for NMs!

Require:

- Methods to characterize NMs: every stage of exposure (incl. complex media), uptake, distribution, and accumulation

  ⇒ determine exact bioavailable/bioaccumulated dose & correlate quantified response with measured dose

  ⇒ together with ecotox data, allow us to perform sound RAs and to set environmental quality standards for NMs.

Research needs – Predictive models

Need:

- Good databases!
  - Experimental projects being able to report data in accessible format
  - Modelling projects finding appropriate information

Require:

- Essential to strengthen communication between those doing regulatory testing, modelling, and fundamental experimental research to create the basis for optimal use of experimental data

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List of main issues discussed/to be discussed

1. Please list your top three knowledge gaps
2. Please list your top three research priorities
3. Emerging nanomaterials. Are you aware of any emerging type(s) of nano material that we have not focused on yet (e.g., 2-3 generation / surfaces - multiple layers / incorporation in matrices)?
4. How to bridge the gap between manufactured and released (environmental/aged)
5. ‘Rules-of-thumb’. Please list and describe how close we are to coming up with ‘rules-of-thumb’ relations regarding environmental toxicity of nanomaterials (e.g., corrections for water hardness, pH effects, most sensitive organism, most sensitive endpoints etc)
6. Particle size/shape. Please describe what evidence (not opinion) there is on the relationship between particle size/shape and toxicity? Is there a weight of evidence one way or another for a particle-size/shape effect in the ecotox literature?

Main issues discussed

7. Long term effects. What do current tests (and results) tell us about long term ecotox effects?
8. Toxicity vs. production volume. Please provide your view on what priority, both in terms of hazard and risk assessment, should be given to low toxicity materials produced in high volumes (e.g. TiO2), compared to very toxic materials with low production levels at present (e.g., Cu NPs)?
9. Result communication. Please list/describe how we can strengthen communication between those doing regulatory testing, modelling and fundamental experimental research to create the basis for optimal use of experimental data.
10. Result communication. Please list/describe how we can improve result communication and data sharing and dialog between experimentalists/modellers to Risk assessors, regulators and society organizations.

- Recommendations and conclusions

- Workshop!!