

**US-EU**  
**Bridging Nano-EHS research Efforts**

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The OECD Working Party of Manufactured Nanomaterials:  
Latest Developments and Outlook for the Future

# Nanotechnologies

- **nanotechnologies are likely to have a major impact across a range of economic sector**
  - **energy production, health industry, cosmetics, information technologies, textiles**
- **global market has increased over time**

Safety information is needed on

- **effects of nanomaterials**
- **Exposure measurement (occupational, Consumers and environment)**
- **hazard assessment**
- **Risk assessment**

# OECD Working Party on Manufactured Nanomaterials (WPMN)

- **Background**
  - **safety of Nanotechnologies first addressed at OECD (Nov. 2004, Chemicals Committee)**
  - **special session on the potential implications of manufactured nanomaterials for human health and environmental safety (June 2005)**
  - **Workshop on the Safety of manufactured Nanomaterials (Dec 2005)**
- **Establishment of the WPMN in Sept.2006**
- **1st Meeting in Oct 2006**

## Participants to the WPMN

- **OECD Member Countries**
  - **Australia; Austria, Belgium, Canada, Czech republic, Denmark, Finland, France, Germany, Ireland, Israel, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Poland, Slovak Republic, Spain, Slovenia, Sweden, Switzerland, Turkey, UK, US, EC**
- **Observers**
  - **China; Singapore, South Africa, Thailand, Russian Federation**
  - **Inter-governmental Organisations: IOMC (FAO, UNEP, UNITAR and WHO**
  - **other Organisations: BIAC, ICAPO, ISO (TC 229), TUAC and environmental NGOs**

## WPMN Projects

- **OECD database on Manufactured Nanomaterials to Inform and Analyse EHS Research Activities;**
- **Safety Testing of a Representative Set of Manufactured Nanomaterials;**
- **Manufactured Nanomaterials and Test Guidelines;**
- **Co-operation on Voluntary Schemes and Regulatory Programmes;**
- **Co-operation on Risk Assessment;**
- **The Role of Alternative Methods in Nano Toxicology;**
- **Exposure Measurement and Exposure Mitigation; and**
- **Environmentally Sustainable Use of Nanotechnology**

# OECD Database on Manufactured Nanomaterials to Inform and Analyse EHS Research Activities



- **Objective**
  - **To develop a global resource (Database), which details research projects and identifies research needs**
  - **To provide opportunities to identify the similar fields, and lead to create new collaboration and networks**
- **Status**
  - **The database was publicly launched (April 2009), and includes more than 750 research data (Sep 2010)**
  - **A comprehensive compilation document “EHS Research Strategies on MNs” was published (May 2009)**
- **Next Step**
  - **Promotion for further data population**
  - **Evaluation for identification of research priorities and gaps**

# Sponsorship Programme for Testing Manufactured Nanomaterials

- **International effort to share the testing of an agreed set of manufactured nanomaterials selected by WPMN**
- **Objective**
  - **To test a representative set of Manufactured Nanomaterials (13)**
- **Two phases:**
  - **Phase 1: to test selected MNs for the selected endpoints (launched Nov 2007-continuing)**
  - **Phase 2: consideration of those cross-cutting issues or tests that identified by phase 1 ( 2011)**



# Safety Testing of a Representative Set of Manufactured Nanomaterials: Sponsorship Programme

- **Objective**
  - **To test a representative set of Manufactured Nanomaterials (13)**
- **Status/Next steps**
  - **Stage 1 (completed)**  
**A list of MNs (based on materials which are now or soon to enter, commerce) and a list of endpoints**
  - **Stage 2 (July 2009~)**  
**Implementation of the Sponsorship Programmes for the Testing of Manufactured Nanomaterials**

- **Nanomaterial Information/Identification (9 endpoints)**
  - (e.g.) substance name, chemical identity, uses, coating
- **Physical-Chemical Properties and Material Characterization (17 endpoints)**
  - (e.g.) water solubility, particle size, agglomeration/aggregation
- **Environmental Fate (15 endpoints)**
  - (e.g.) biodegradability, adsorption, accumulation
- **Environmental Toxicology (6 endpoints)**
  - (e.g.) effects on aquatic and terrestrial organisms
- **Mammalian Toxicology (9 endpoints)**
  - (e.g.) inhalative toxicity, reproductive toxicity, genotoxicity
- **Material Safety (3 endpoints)**
  - (e.g.) flammability

## Manufactured Nanomaterials and Test Guidelines

- **Objective**
  - **To review existing OECD Test Guidelines (TGs) for adequacy in addressing MNs**
  - **To identify need for new or revised test guidelines**
  
- **Status/Next steps**
  - **Consideration of OECD TGs for their applicability to MNs**
    - **Preliminary conclusions published in 2009: Most TGs are applicable (some need adjustment)**
    - **Review of the preliminary conclusion (2010~)**
  - **Guidance Notes on Sample Preparation and Dosimetry for Safety Testing of MNs (published in 2010)**

# Cooperation on Voluntary Schemes and Regulatory Programmes

- **Status**

- **Analysis of Information Gathering Initiatives of MNs (Nov 2009)**
- **Report of the Questionnaire on Regulatory Regimes for MNs (May 2010)**
- **Questionnaire on Regulated Nanomaterials: 2006-2009 (underway)**

- **Next steps**

- **To share information on national voluntary/regulatory programmes a Collaborative Workspace as well as Information Sharing Database will be established (Late 2010)**
- **Draft report on Information Gathering Schemes (early 2011)**
- **Draft report on Regulated Nanomaterials: 2006-2009 (late 2011)**

# Cooperation on Risk Assessment

- **Objective**
  - **To evaluate risk assessment approach for MNs**
- **Next Step**
  - **Workshop on Risk Assessment of Manufactured Nanomaterials in a Regulatory Context (Sep 2009)**
    - **published in 2010**
    - **Report on Risk Assessment of Manufactured Nanomaterials**
    - ***Critical issues*(2011)Key Issues: current practices, challenges on risk assessment and strategies; the necessity of direct research towards Risk Assessment**

# The Role of Alternative Methods in Nanotoxicology

- **Objective**
  - **To address the use of alternative test methods and testing strategies (in parallel with the Sponsorship Programme)**
- **Status**
  - **1st Expert Consultation Meeting on Alternative Test Methods was held in April 2010**
  - **2nd Expert Consultation Meeting (incl. a special session on *in-vitro* dispersion protocols) was held in January 2011**
- **Next Steps**
  - **Prepare a case study on one of Sponsored substances (2010~)**

# Cooperation on Exposure Measurement and Exposure Mitigation



- **Objective**
  - **To exchange information on guidance for exposure measurement and exposure mitigation for Manufactured Nanomaterials**
- **Current Projects**
  - **Comparing exposure mitigation guidance for laboratories (to be published in 2010)**
  - **Evaluating data and provide recommendation on measurement technologies and sampling protocols for determining concentrations of manufactured nanomaterials in air**

## **Next Step**

- **Developing Case Studies for exposure assessment on MNs (late 2009~)**
- **Updating of documents**

## Environmentally Sustainable Use of Nanotechnology

- **Background**

- **OECD Conference on Potential Environmental Benefits of Nanotechnology: Fostering Safe Innovation-Led Growth (15-17 July 2009, Paris)**

- **Next Step**

- **Preparing an interim report on national activities related to life cycle assessment and nanotechnology (2010~)**



## **Recent Publications on Manufactured Nanomaterials (published in 2010)**

- **Current Developments/Activities on the Safety of Manufactured Nanomaterials, Tour de Table at the 7th Meeting of the WPMN**
- **Guidance Manual for the Testing of Manufactured Nanomaterials: OECD Sponsorship Programme: First Revision**
- **Preliminary Guidance Notes on Sample Preparation and Dosimetry for the Safety Testing of Manufactured Nanomaterials**
- **Report of the Questionnaire on Regulatory Regimes for Manufactured Nanomaterials**
- **OECD Programme on the Safety of Manufactured Nanomaterials 2009-2012: Operational Plans of the Projects**
- **Report of the Workshop on Risk Assessment of Manufactured Nanomaterials in a regulatory context**

## Upcoming Publications

- **List of Manufactured Nanomaterials and List of Endpoints for Phase one of the Sponsorship Programme for the Testing of Manufactured Nanomaterials: Revised**
- **Compilation of Nanomaterial Exposure Mitigation Guidelines Relating to Laboratories**
- **Critical Issues in the Risk Assessment of Manufactured Nanomaterials**

**More information**

**Safety of  
Manufactured Nanomaterials**  
[www.oecd.org/env/nanosafety](http://www.oecd.org/env/nanosafety)

**Contact OECD Secretariat**  
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