

Global Engagement on Nano EHS: Role of the OECD in International Governance

Jeff Morris

National Program Director for Nanotechnology

www.epa.gov/nanoscience

Amherst, MA

24 September 2010

State of Play: OECD Role International Governance

Issue. Nanotechnology EHS issues are global

Action. Collaboration established through OECD

Status. Significant progress in several areas

Future. Enhanced engagement with “outside” experts

Organization for Economic Cooperation and Development (OECD)

	Australia		Austria		Belgium
	Canada		Czech Republic		Denmark
	Finland		France		Germany
	Greece		Hungary		Iceland
	Ireland		Italy		Japan
	Korea		Luxembourg		Mexico
	Netherlands		New Zealand		Norway
	Poland		Portugal		Slovak Republic
	Spain		Sweden		Switzerland
	Turkey		UK		US

OECD Working Party on Manufactured Nanomaterials (WPMN)

Established September 2006

Objective: *To promote international cooperation in health and environmental safety related aspects of manufactured nanomaterials, in order to assist in their safe development*

Chaired by United States 2006 – 2009

Currently chaired by the European Commission

Works through the implementation of 9 projects

Links to OECD Working Party on Nanotechnology (WPN) and ISO TC229

WPMN Participants

OECD member countries

Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Poland, Slovak Republic, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States, European Commission.

Observers

- Brazil, China, Singapore, South Africa, Thailand, and the Russian Federation;
- Inter-governmental Organizations: IOMC, FAO, UNEP, UNITAR, WHO; and
- Other Organizations: BIAC, ICAPO, ISO (TC 229), TUAC, and Environmental NGOs.

OECD WPMN Projects

Project 1: Database on Safety Research

Project 2: Research Strategies on Manufactured Nanomaterials

Project 3: Safety Testing of a Representative Set of Manufactured Nanomaterials

Project 4 : Manufactured Nanomaterials and Test Guidelines

Project 5: Cooperation on Voluntary Schemes and Regulatory Programs

Project 6: Cooperation on Risk Assessment

Project 7: Alternative Methods in Nano Toxicology

Project 8: Exposure Measurement and Exposure Mitigation

Project 9: Environmental Benefits and Green Nanotechnology

WPMN Test Guideline Effort

Objectives

- To review existing OECD Test Guidelines for adequacy in addressing nanomaterials
- To identify need for new or revised test guidelines

Progress

- Preliminary conclusions: Most test guidelines are appropriate (some might need adjustment)
- Preliminary Guidance Notes on Sample Preparation and Dosimetry (to be published in 2010)

Next Step: Second guideline review, informed by sponsorship program and other efforts.

Sponsorship Program for Testing Manufactured Nanomaterials

International effort to share the testing of an agreed set of manufactured nanomaterials selected by WPMN.

Phase 1: Test selected manufactured nanomaterials for the selected endpoints (Nov 2007-present)

Phase 2: Cross-cutting issues or tests identified in Phase 1 (2011)

List of Endpoints for Phase 1 Testing

Nanomaterial Information/Identification (9 endpoints)

Physical-Chemical Properties and Material Characterization (17 endpoints)

Environmental Fate (15 endpoints)

Environmental Toxicology (6 endpoints)

Mammalian Toxicology (9 endpoints)

Material Safety (3 endpoints)

OECD Sponsorship Arrangements

	Lead sponsors	Co-sponsors	Contributors
C-60 Fullerenes	Japan, US		China, Denmark
SWCNTs	Japan, US		Germany, Canada, EC, France, China, BIAC*
MWCNTs	Japan, US	Korea, BIAC	Germany, Canada, EC, France, China, BIAC
Silver nanoparticles	US, Korea	Germany, Canada, Nordic Council of Ministers, Australia	China, EC, France, Netherlands, BIAC
Iron nanoparticles	China	US	Canada, Nordic Council of Ministers, Nordic Council of Ministers
Gold Nanoparticles	South Africa	Korea, United States	EC
Titanium dioxide	France, Germany	Canada, Spain, BIAC, Korea, US, Austria, EC	Denmark, China, UK, Japan
Aluminium oxide			Germany , US, Japan
Cerium oxide	US, BIAC	Australia, Spain	Denmark, Germany, EC, Switzerland, Japan, Netherlands
Zinc oxide	BIAC	Australia, US	Canada, Denmark, Japan, Germany, Spain, Netherlands, EC
Silicon dioxide	France, EC	BIAC, Korea, Belgium	Denmark, Japan
Dendrimers		Spain, US	Austria, Korea
Nanoclays	BIAC		EC, US, Denmark

Communities of Practice

- Global body of scientific experts convened to address technical issues that impede the Sponsorship Program.
- Will involve on-line discussions, leading to “State of Research” Bulletins.
- First discussions May – June 2010.

New WPMN Project: Environmentally Sustainable Use of Nanotechnology

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

Purpose. To enhance the knowledge base about life cycle aspects of manufactured nanomaterials as well as positive and negative impacts on environment and health of certain nano-enabled applications at their different stages of development.

Next Step. Select case studies for development and evaluation.

Examples of Greener Nanotechnology Applications [and possible issues]

- Quantum dot-enabled backlit displays that can deliver low energy light [currently expensive and cadmium issues]
- Fullerenes and nanopolymers that enable flexible, higher efficiency solar cells [high energy inputs to manufacture and the technology is not quite there]
- Carbon nanotubes to reduce weight while strengthening components and improving safety (e.g., for automobiles, airplanes) [high energy inputs to produce, potential worker impacts on front end]
- Nanoparticles and membranes to purify and desalinate water using less energy compared to conventional technologies [technology is not quite there]

OECD/UNITAR/IOMC Awareness-Raising Workshop Series



OECD/UNITAR/IOMC Awareness-Raising Workshop Series

Objectives

- Introduce nanotechnology to new audiences, primarily but not exclusively in the developing world
- Potential impacts as well as benefits
- Governance issues
- Information needs, involvement approaches

In Summary

- WPMN started over concerns about test guidelines and data needs.
- Has evolved into areas such as sustainability, outreach to developing nations.
- The formal and informal collaborations resulting from WPMN activities are advancing global nanotechnology governance.