



OCDE ORGANISATION DE COOPÉRATION ET  
DE DÉVELOPPEMENT ÉCONOMIQUES



# OECD's work on the Safety of Manufactured Nanomaterials

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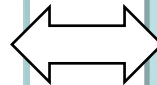
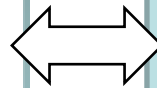
# OECD Work on Nanotechnologies

## Committee on Scientific And Technological Policy

### **Working Party on Nanotechnology**

#### Objectives: Applications

Socio-economic analysis of nanotechnology and the facilitation of international collaboration in R&D and S&T policies in the field



## Chemicals Committee

### **Working Party on Manufactured Nanomaterials**

#### Objectives: Implications

Human health and environmental safety implications of manufactured nanomaterials (mainly the industrial chemicals sector)

# **Working Party on Nanotechnology**

## **Projects:**

- Statistics and Measurement
- Nanotechnology Impacts on Companies and the Business Environment
- International R&D collaboration
- Communication and public engagement
- Policy Dialogue
- Global Challenges: Nano and Water

# Working Party on Manufactured Nanomaterials

## Who participates?

- 30 OECD Member Countries and the European Commission
- Non-members: Brazil; China; Singapore; Thailand; and Russia
- Inter-governmental organizations: WHO and UNEP
- ISO
- Other stakeholders: business/ industry; organized labor; and environmental NGOs



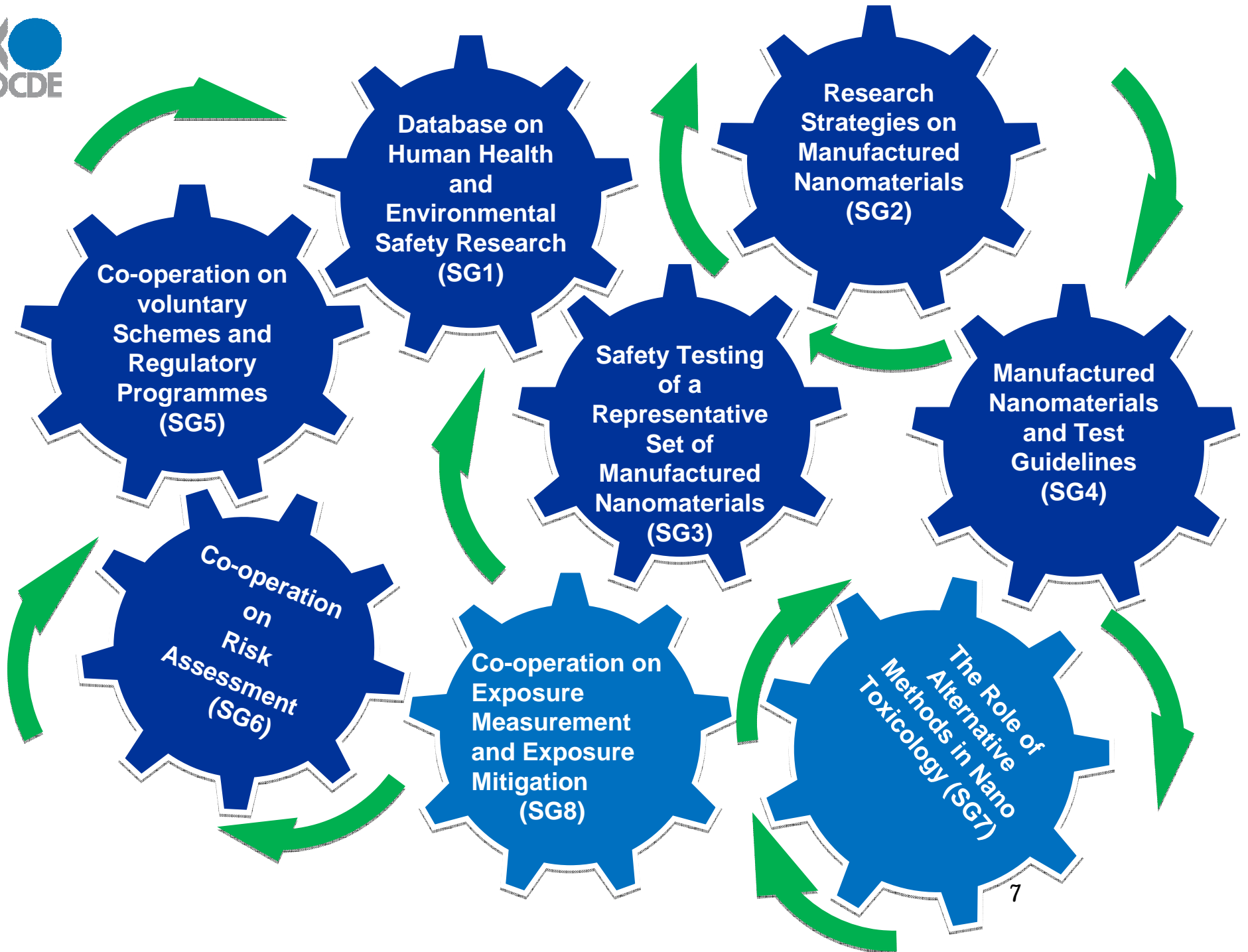
# WPMN projects: Highlights/ Next steps

- **Project 1: Database on Human Health and Environmental Safety Research:** Database with research project information – public launch in November 2008
- **Project 2: Research Strategy(ies) on Human Health and Environmental Safety Research:** Review of current research programmes has identified research themes which already have wide coverage and those less well covered
- **Project 3: Testing a Representative Set of Manufactured Nanomaterials (MN):** Sponsorship programme for the testing of 14 MNs for 61 endpoints
- **Project 4: Manufactured Nanomaterials and Test Guidelines:** Development of guidance on sample preparation and dosimetry for the testing of manufactured nanomaterials



# WPMN projects: Highlights/ Next steps

- **Project 5: Co-operation on Voluntary Schemes and Regulatory Programmes:** Analysis of national information gathering programmes
- **Project 6: Co-operation on Risk Assessment:** Review of existing risk assessment schemes and their relevance to nanomaterials
- **Project 7: The Role of Alternative Methods in Nanotoxicology:** Reviewing alternative test methods which will avoid animal tests and which will be applicable to manufactured nanomaterials.
- **Project 8: Exposure Measurement and Exposure Mitigation:** Development of recommendations on measurement techniques and sampling protocols for inhalation and dermal exposures in the workplace.



## Current focus

# Safety Testing of a Representative Set of Manufactured Nanomaterials

**Objective:** To test an agreed representative set of manufactured nanomaterials using appropriate test methods.

**Aim:** To understand the types of information on intrinsic properties that may be relevant to exposure and the effects assessment of MNs.

In close co-ordination with other OECD work on Chemical Safety: Test Guidelines, Mutual Acceptance of Data

# Implementation - Two Stages

## Stage 1

Agreement on:

- i) A list of **MNs** (based on materials which are now, or soon to enter, commerce) ; and
- ii) A list of **endpoints** for which these MNs should be tested.

## Stage 2

Development of a programme to test MNs for human health and environmental safety

## Stage 1:

# List of Manufactured Nanomaterials (14)

- ▶ Fullerenes (C60)
- ▶ Single-walled carbon nanotubes (SWCNTs)
- ▶ Multi-walled carbon nanotubes (MWCNTs)
- ▶ Silver nanoparticles
- ▶ Iron nanoparticles
- ▶ Carbon black
- ▶ Titanium dioxide
- ▶ Aluminium oxide
- ▶ Cerium oxide
- ▶ Zinc oxide
- ▶ Silicon dioxide
- ▶ Polystyrene
- ▶ Dendrimers
- ▶ Nanoclays

# Stage 1: List of Endpoints

- ▶ Nanomaterial Information/Identification (9 endpoints)
- ▶ Physical-Chemical Properties and Material Characterization (16 endpoints)
- ▶ Environmental Fate (14 endpoints)
- ▶ Environmental Toxicology (5 endpoints)
- ▶ Mammalian Toxicology (8 endpoints)
- ▶ Material Safety (3 endpoints)

## **Stage 2: Sponsorship Programme**

The **sponsorship programme** is an international effort to share the testing of an agreed set of manufactured nanomaterials selected by the WPMN.


### **Two phases:**

- **Phase 1:** To test selected MNs for the selected endpoints (official launch of phase 1: November 2007)
- **Phase 2:** phase 1 will identify those cross-cutting issues or tests that will need further consideration by the WPMN

# Sponsorship Programme

## Work in Progress Phase 1

- Launched November 2007
- OECD Secretariat is the clearing house to ensure co-ordination
- Development of a guidance manual for sponsors to guide the testing
- Workshop in Korea will assist Sponsors in their development of Dossier plans (November 2008)
- Draft Dossier Development Plans to be considered by the 5<sup>th</sup> WPMN (March 2008)

	Lead sponsor(s)	Co-sponsor(s)	Contributor
Fullerenes(C60)	Japan, US		China
SWCNTs	Japan, US		Germany, Canada, EC, France, China
MWCNTs	Japan, US	Korea, BIAC	Germany, Canada, EC, France, China
Silver nanoparticles	US, Korea	Germany, Canada	Australia, EC, France, China
Iron nanoparticles	China		Canada, US
Carbon black			Germany, US
Titanium dioxide	Germany	Canada, Spain, BIAC, Korea, US	France, China
Aluminium oxide			Germany, US
Cerium oxide	UK/BIAC, US	Netherlands,	Australia, Germany, EC
Zinc oxide	UK/BIAC	BIAC	Australia, Canada,
Silicon dioxide		BIAC, Korea	EC, France
Polystyrene			Korea
Dendrimers		Spain	US
Nanoclays			US

# **Manufactured Nanomaterials and Test Guidelines**

**Preliminary conclusions and recommendations from the review of the OECD Test Guidelines on:**

- Physical Chemical Properties
- Effects on Biotic Systems
- Degradation and Accumulation
- Health Effects

**Development of Guidance on:**

- Sample Preparation and Dosimetry
- Instillation vs. Inhalation studies



# Alternative Methods in Nano Toxicology to reduce Animal Testing

New project to evaluate and, where applicable, validate *in vitro* and other methodologies

## **Status:**

- Review of currently validated *in vitro* methods to evaluate their applicability for testing nanomaterials
- Integration with other projects
- Testing needs to be considered during sponsorship

## More information

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