



**instituto sindical  
de trabajo, ambiente y salud**



# **Nanotechnology: European & Spanish Regulatory Framework**

**23/11/11**

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**ISTAS-CCOO**



Presentation outline:

**1** Introduction: activities, products, market, potential hazards

**2** Nanotechnology: Regulatory Framework

**3** Spain: current situation

**3.1** ISTAS-CCOO Activities

**4** Conclusions



**1 Introduction: activities, products, market, potential hazards**

**2 Nanotechnology: Regulatory Framework**

**3 Spain: current situation**

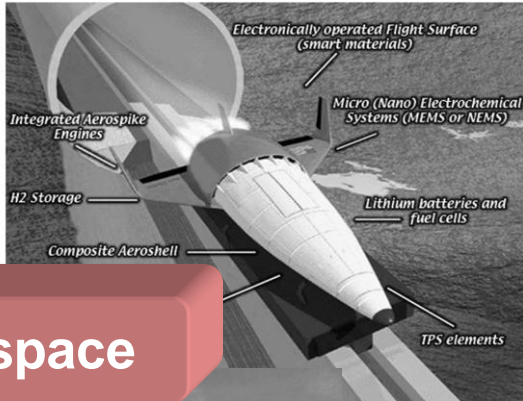
**3.1 Activities ISTAS-CCOO**

**4 Conclusions**



# Introduction

## Activities...



**Aerospace**

**Automotive**



**Construction**



**Energy saving  
Renewable energies**



**Food & additives**



**Medicine/Pharmaceutical**

**etc.....**



# Introducción

Some products...



Containers



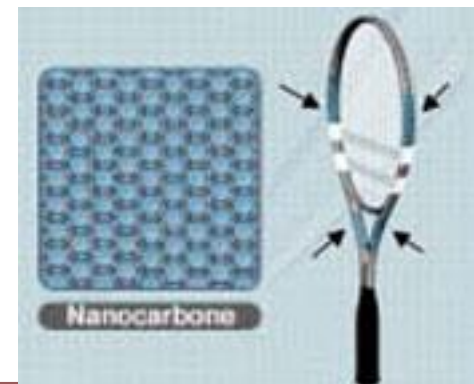
Cosmetics



Fabrics/Clothing



Communications



Sports



Solar Panels

etc.....

<http://www.nanotechproject.org/inventories/consumer/>



# Introduction: market

## 2009 Global market for nanomaterials

1. Coatings
2. Composites
3. Catalysts
4. Drug delivery
5. Energy storage
6. Sensors
7. Therapeutics
8. Display Screens
9. Memory chips
10. Solar Panels
11. Filters

Lux Research

**Nanomaterials  
Market 2009: \$1B**

**Nanointermediates  
Market 2009 \$29B**

**Nano enabled products  
Market 2009 \$224B**

1. Ceramic nanoparticles
2. Carbon nanotubes (CNT)
3. Nanoporous materials
4. Graphene
5. Metal nanoparticles
6. Nano-encapsulation
7. Fullerenes
8. Dendrimers
9. Nanostructured metas
10. Nanowires
11. Quantum dots

1. Cars
2. Construction
3. Electronics
4. Personal care products
5. Marine
6. Aerospace
7. Sports
8. Food , agriculture
9. Industrial equipment
10. Fabrics
11. Defense



## INHALATION

- Translocation → increased possibility of **crossing cell boundaries**.
- If surface area is a driver for toxicity → **increased toxic effects**
- Reduction in size → Increased solubility, therefore **increased bioavailability**
- New and different properties (chemicals or physical) → different biological properties → **different toxicity**
- Comparison between high aspect ratio nanoparticles and asbestos, similar morphology than fibres → **persistence and accumulation in lungs**

## DERMAL EXPOSURE

- Penetration through damaged skin

## INGESTION

- Unlikely. Need to minimise exposure through this route



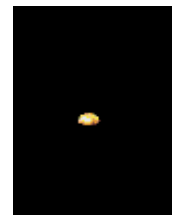
Particle  
size



Specific area



Violence of the dust  
explosion and ease  
of ignition





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## Specific committees and working groups on Nanotechnology

### ISO/TC 229 Nanotechnologies



- WG1 Terminology and nomenclature
- WG2 Measurement and characterisation
- WG3 Health, Safety & Environmental aspects of nanotechnologies
- WG 4 Material specifications

### European Committee for standardisation CEN



- CEN/TC 352 “Nanotechnologies” European Committee for standardisation

### IEC/TC 113



- Nanotechnology standardisation for electrical and electronic products and systems

### OECD Grupo de trabajo de nanomateriales fabricados

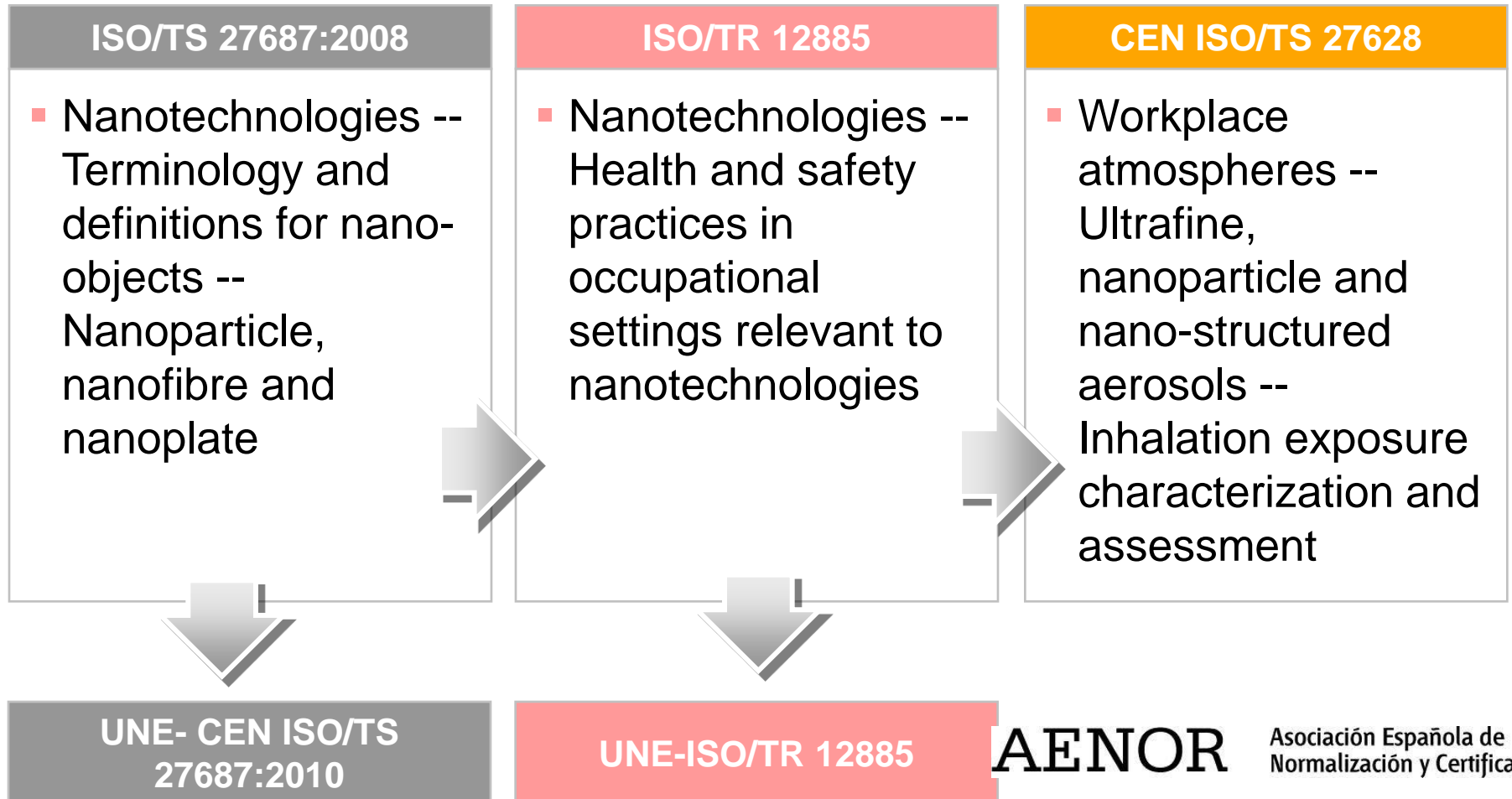


- 8 steering group
- OCDE database containing databases with information about projects related to health, safety and environment

Mandate COM (2010) M/461 For standardization activities regarding nanotechnologies and nanomaterials



## Specific committees and working groups on Nanotech ISO/TC 229





## Regulation review (non- binding):



- ➔ COM (2004) 338: Towards a European Strategy for nanotechnology
- ➔ COM (2007) 505 final: Nanoscience and Nanotechnologies: An action plan for Europe 2005-2009. First Implementation Report 2005-2007
- ➔ 2008 European activities in the field of ethical, legal and social aspects (ELSA) and governance of nanotechnology
- ➔ 2009 The Commission published the Second Implementation Report
- ➔ 2011 The Commission will issue a progress report on the implementation of existing regulations on nanomaterials
- ➔ Commission Recommendation: **Code of conduct** for responsible nanosciences and nanotechnologies research
- ➔ 2nd Action Plan 2010-2015



## REACH



- ➔ REACH: (CE) 1907/2006 Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals



### CA/59/2008 (Competent Authorities REACH Steering Group) REACH in nanomaterials:

No specifically for nanomaterials, however...

- Nanomaterials are under the “substance” definition in REACH
- Substances manufactured or imported >1T require registration but if it is known to be of very high concern will have to be registered even below 1 T/y, authorisation and restriction processes will apply regardless
- When an existing chemical is introduced on the market in a nanomaterial form, the registration dossier will have to include specific properties of the nanoform (included tonnage)
- Competent Authorities may request further information (health, safety, physico-chemical properties, environment)



CA/90/2009 (Competent Authorities REACH Steering Group):  
REACH in nanomaterials:

Classification, Labelling and Packaging of nanomaterials in REACH y CLP



Classification and labeling on a CASE by CASE basis

REACH Implementation Projects on Nanomaterials (RIPonN):

RIP-oN1 Substance identity

1. Case study CNT
2. Case study Nanosilver
3. Case study Nano TiO<sub>2</sub>
4. Case study NanoCaCO<sub>3</sub>

RIP-oN2 Information requirements and testing of nanomaterials

RIP-oN3 Chemicals Safety Assessments



# Nanotechnologies: Regulatory Framework

European Parliament resolution of 24 April 2009 on regulatory aspects of nanomaterials (2008/2208(INI)) NM (2010/C 184 E/18):

3. Does not agree with the Commission's conclusions that current legislation covers in principle the relevant risks relating to nanomaterials and it is effectively unable to address their risks due to lack of appropriate data and methods to assess the risks



4. The concept of the 'safe, responsible and integrated approach' to nanotechnologies advocated by the European Union is jeopardised by the lack of information on the use and on the safety of nanomaterials that are already on the market

5. Calls on the Commission to review all relevant legislation within two years (REACH)

 June 2010: European Members of Parliament vote to ban Nanosilver and CNT in Electrical and electronic products (RoHD 2002/95/EC)



European Commission Public Consultation on a proposal for a definition of the term nanomaterial (2010)

1. *Nanomaterial: means a material that meets at least one of the following criteria:*

- *consists of particles, with one or more external dimensions in the size range 1 nm - 100 nm for more than 1 % of their number size distribution;*
- *has internal or surface structures in one or more dimensions in the size range 1 nm - 100 nm;*
- *has a specific surface area by volume greater than 60 m<sup>2</sup>/cm<sup>3</sup>, excluding materials consisting of particles with a size lower than 1 nm.*

2. *Particle: means a minute piece of matter with defined physical boundaries (ISO 146446:2007).*



01/March/2011



Public consultation (Scientific opinion) results:

## SCENIHR Scientific Committee for Emerging and Newly Identified Health Risks

- Size,
- Size distribution,
- Specific surface area,
- Surface modification,
- Other physical-chemical characteristics

[http://ec.europa.eu/health/scientific\\_committees/emerging/docs/scenihr\\_o\\_032.pdf](http://ec.europa.eu/health/scientific_committees/emerging/docs/scenihr_o_032.pdf)





## Commission Recommendation 18 Oct 2011

- "Nanomaterial" means a natural, incidental or manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 50 % or more of the particles in the number size distribution, one or more external dimensions is in the size range 1 nm - 100 nm.
- In specific cases and where warranted by concerns for the environment, health, safety or competitiveness the number size distribution threshold of 50 % may be replaced by a threshold between 1 and 50 %.
- By derogation from the previous point fullerenes, graphene flakes and single wall carbon nanotubes with one or more external dimensions below 1 nm should be considered as nanomaterials.



Institute for Health and Consumer Protection

**JRC NANOhub**

NANOhub installations available

- JRC IHCP
- OPEN SCIENCE
- NM-NANOmaterials Repository

**Projects**

- BMBF-UMSICHT
- ENPRA
- InLiveTox
- NANOGENOTOX
- NANOimmune
- NANOPOLYTOX
- NANotest

**OECD-WPMN Projects**

- OECD-NanoMaPPP
- OECD-PROSPECT
- OECD-RefNanoCLAYM
- OECD-WPMN Ceria
- OECD-WPMN SG7
- OECD-WPMN Silver
- OECD-WPMN Titanium Dioxide
- OECD-WPMN Zinc Oxide

## European Commission

- Nanomaterials Repository: representative nanomaterials
- Includes: titanium dioxide, silica, zinc oxide, cerium dioxide, nano-silver, nanoclays and carbon nanotubes
- Vials distributed to labs in France, Germany, United Kingdom, Belgium, Netherlands, Denmark, Spain, Poland, Italy, Austria, Slovakia, USA, Canada, Japan, Korea, China y Russia
- Nanohub: It is a comprehensive IT platform dedicated to the management of information on NM which are relevant for safety and risk assessment.

[http://ihcp.jrc.ec.europa.eu/our\\_activities/nanotechnology/reference-nanomaterials](http://ihcp.jrc.ec.europa.eu/our_activities/nanotechnology/reference-nanomaterials)



List of nanomaterials in the JRC Nanomaterials (NM) Repository (23 February 2011)<sup>1</sup>

| NM code     | Type of nanomaterial <sup>2</sup> | Label name                               |
|-------------|-----------------------------------|--|
| NM-100      | TiO <sub>2</sub>                  | Titanium Dioxide                         |
| NM-101      | TiO <sub>2</sub>                  | Titanium Dioxide                         |
| NM-102      | TiO <sub>2</sub>                  | Titanium Dioxide                         |
| NM-103      | TiO <sub>2</sub>                  | Titanium Dioxide thermal, hydrophobic    |
| NM-104      | TiO <sub>2</sub>                  | Titanium Dioxide thermal, hydrophobic    |
| NM-105      | TiO <sub>2</sub>                  | Titanium Dioxide rutile-anatase          |
| NM-110      | ZnO uncoated                      | Zinc Oxide                               |
| NM-111      | ZnO coated                        | Zinc Oxide coated triethoxycaprylsilane  |
| NM-112      | Zinc oxide                        | Zinc Oxide                               |
| NM-113      | Zinc oxide                        | Zinc Oxide                               |
| NM-200      | SiO <sub>2</sub> precipitated     | Synthetic Amorphous Silica               |
| NM-201      | SiO <sub>2</sub> precipitated     | Synthetic Amorphous Silica PR-B-01       |
| NM-202      | SiO <sub>2</sub> thermal          | Synthetic Amorphous Silica PY-AB-03      |
| NM-203      | SiO <sub>2</sub> thermal          | Synthetic Amorphous Silica PY-A-04       |
| NM-204      | SiO <sub>2</sub> precipitated     | Synthetic Amorphous Silica PR-A-05       |
| NM-211      | Cerium Dioxide                    | Cerium (IV) Oxide precipitated, uncoated |
| NM-212      | Cerium Dioxide                    | Cerium (IV) Oxide precipitated, uncoated |
| NM-213      | Cerium Dioxide                    | Cerium (IV) Oxide                        |
| NM-300      | Silver                            | Silver <20 nm                            |
| NM-300K     | Silver                            | Silver <20 nm                            |
| NM-300DIS   | Silver                            | Ag - dispersant                          |
| NM-300K DIS | Silver                            | Ag – dispersant <20 nm                   |
| NM-400      | MWCNT                             | Multi-walled carbon nanotubes            |
| NM-401      | MWCNT                             | Multi-walled carbon nanotubes            |
| NM-402      | MWCNT                             | Multi-walled carbon nanotubes            |
| NM-403      | MWCNT                             | Multi-walled carbon nanotubes            |
| NM-600      | Nanoclay                          | Bentonite                                |



# Nanotechnologies: Regulatory Framework



## List of materials in the JRC Nanomaterials (NM) Repository

Last update: 27 October 2011

| NM code | Type of material <sup>1</sup> | Label name                              | Mean particle size [nm] | Primary particle or crystal size [nm] | Specific surface area [m <sup>2</sup> /g] | Average Length <sup>2</sup> [micron] | Average Diameter <sup>3</sup> [nm] | Other information |
|---------|-------------------------------|---|-------------------------|---------------------------------------|---|--------------------------------------|------------------------------------|-------------------|
| NM-100  | Titanium Dioxide              | Titanium Dioxide                        | 267                     | 42 - 90                               | 10  |                                      |                                    | anatase           |
| NM-101  | Titanium Dioxide              | Titanium Dioxide                        | 38                      | 6                                     | 320                                       |                                      |                                    | anatase           |
| NM-102  | Titanium Dioxide              | Titanium Dioxide, anatase               | 132                     | 20                                    | 90  |                                      |                                    | anatase           |
| NM-103  | Titanium Dioxide              | Titanium Dioxide thermal, hydrophobic   | 186                     | 20                                    | 60  |                                      |                                    | rutile            |
| NM-104  | Titanium Dioxide              | Titanium Dioxide thermal, hydrophilic   | 67                      | 20                                    | 60  |                                      |                                    | rutile            |
| NM-105  | Titanium Dioxide              | Titanium Dioxide rutile-anatase         | 95                      | 22                                    | 61  |                                      |                                    | rutile-anatase    |
| NM-110  | Zinc Oxide, uncoated          | Zinc Oxide                              | 150                     | 42                                    | 13  |                                      |                                    |                   |
| NM-111  | Zinc Oxide, coated            | Zinc Oxide coated triethoxycaprylsilane | 140                     | 34                                    | 16  |                                      |                                    |                   |
| NM-200  | Silicon Dioxide               | Synthetic Amorphous Silica PR-A-02      | 47                      | 20                                    | 230                                       |                                      |                                    | precipitated      |
| NM-201  | Silicon Dioxide               | Synthetic Amorphous Silica PR-B-01      | 62                      | 8-15                                  | 160                                       |                                      |                                    | precipitated      |
| NM-202  | Silicon Dioxide               | Synthetic Amorphous Silica PY-AB-03     | 108                     | 8-15                                  | 200                                       |                                      |                                    | thermal           |
| NM-203  | Silicon Dioxide               | Synthetic Amorphous Silica PY-A-04      | 137                     | 8-20                                  | 226                                       |                                      |                                    | thermal           |
| NM-204  | Silicon Dioxide               | Synthetic Amorphous Silica PR-A-05      | 75                      | 8-15                                  | 144                                       |                                      |                                    | precipitated      |

<sup>1</sup> Nanomaterials, even of the same chemical composition, can come in various sizes and/or shapes, which may influence their chemical and physical properties.

<sup>2,3</sup> Applicable only to NM-40x series, CNT.



# Nanotechnologies: Regulatory Framework

- ➔ REACH-Regulation 1907/2006 on Registration, Evaluation, Restriction of Chemicals
- ➔ Regulation (CE) n° 1272/2008 on clasificación, labeling substances and mixtures

ONLY 3 REGISTRATIONS

## Health and Safety Legislation



Framework Directive 89/391/EEC  
Health & Safety at Work



Ley 31/95 Prevención Riesgos  
Laborales

Directive 2004/37/EC Carcinogens  
and Mutagens



R.D 665/1997 Cancerígenos y  
mutágenos

Directive 98/24/EC Chemical  
agents



R.D 374/2001  
Agentes químicos

Directive 89/655/EEC Work  
Equipment



R.D 1215/1997 Equipos de  
Trabajo

Directive 89/656/EEC Personal  
Protective Equipment



R.D 773/1997 Equipos de  
Protección Individual

Directive 99/92 Explosive  
atmospheres



R.D 681/2003 Atmósferas  
explosivas





Example of global production of some nanomaterials (T/a):

| TiO <sub>2</sub> | Ag  | ZnO  | CNT | Fullerenes |
|------------------|-----|------|-----|------------|
| 679              | 4   | 18   | 140 | 0.15       |
| 3000             | 5   | 20   | 278 | 5          |
| 5000             | 434 | 528  | 295 | 10         |
| 60926            | 563 | 1800 | 426 |            |
|                  |     | 9845 | 473 |            |
|                  |     |      | 500 |            |

Source EMPA: Swiss Federal Laboratories for Materials Testing and Research

Titanium dioxide applications: Cosmetics, filters, cleaning agents, electronics, plastics, paints, ceramics and glass, light bulbs, metals, batteries, dyeing agents



## European Initiatives

**Belgium**



**Political agenda** with a strong proposal for national authorities to hold discussions on coordinating national strategies and bringing forward concrete measures on risk management, information and monitoring of nanomaterials.

**France**



**Grenelle II Act:** It requires the public and consumers to be informed about the quantities and uses of manufactured, imported or marketed nanoform substances; the materials that might release such nano-substances; and the presence of nanomaterials in articles

**Italy**



**Ministry of Health is drafting regulations on a national nanomaterials database with stakeholder participation**

**Netherlands**



**15% of the 125M euro innovation subsidy has been allocated to risk-related research for a 5 year period and the National Programme on Nanotechnology**



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GOBIERNO DE ESPAÑA  
MINISTERIO DE CIENCIA E INNOVACIÓN

Instalaciones Innovadoras

Inicio EL MINISTERIO INVESTIGACIÓN INNOVACIÓN CULTURA CIENTÍFICA

Estás en: Inicio > Prensa > Noticias

Prensa

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- Discursos
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- Contacto
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01 de septiembre de 2010

España y Japón suscriben un Acuerdo para fortalecer la cooperación científica e impulsar la innovación empresarial

- El nuevo marco, que consolida y amplía las relaciones promovidas por el Ministerio de Ciencia e Innovación desde 2008, incrementará el intercambio científico y multiplicará el desarrollo de proyectos de desarrollo tecnológico conjunto entre empresas españolas y japonesas.

## Nota de prensa

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- La biotecnología y la nanotecnología destacan como prioridades de la colaboración por la existencia en ambos países de grupos de investigación y empresas con oportunidades de liderazgo a nivel internacional.
- El Ministro de Educación, Cultura, Deportes, Ciencia y Tecnología japonés ha comunicado a la Ministra Garmendia la visita inminente a España de una misión científica japonesa de alto nivel para explorar nuevas áreas de cooperación.



- **NanoSpain: Spanish network of nanotechnology**
- **308 Working groups(41 companies)**
- **2000 Researchers**
- **Databases for nanotechnology information**  
**(<http://www.nhecd-fp7.eu/index.php?id=523>)**

## NHECD

Creation of a critical and commented database on the health, safety and environmental impact of nanoparticles

NHECD is supported by the European Commission's 7th RTD Framework Programme

Project Number: NMP4-SA-2008-218639

Project Start: December 1st, 2008

Project Duration: 48 months (2008-2012)

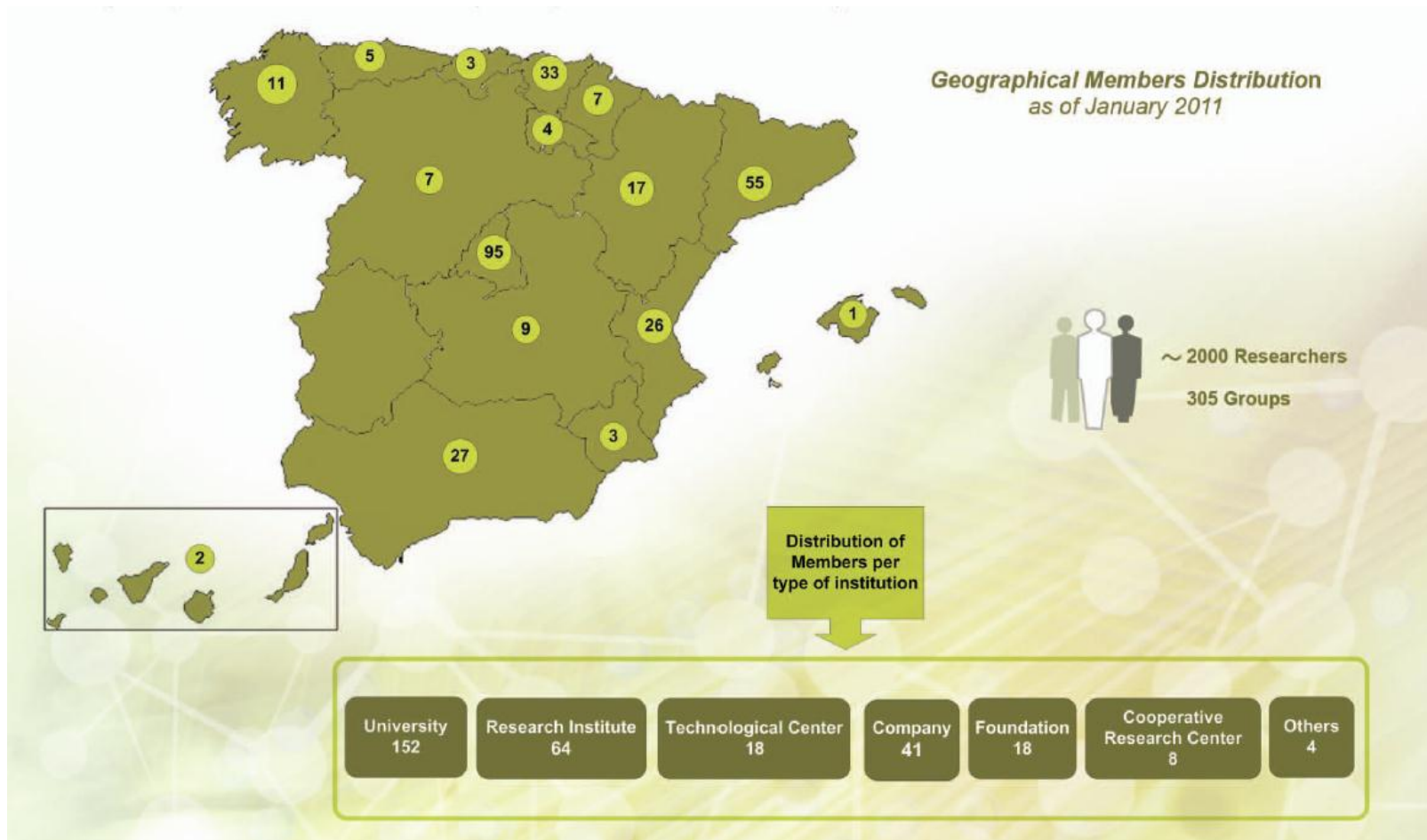
- **NanoJOBS - (from nanowerk)**
- **Nanoenergía: Red de nanotecnologías para energía de la región iberoamericana**



**Red de Nanotecnologías para energía  
de la región Iberoamericana**



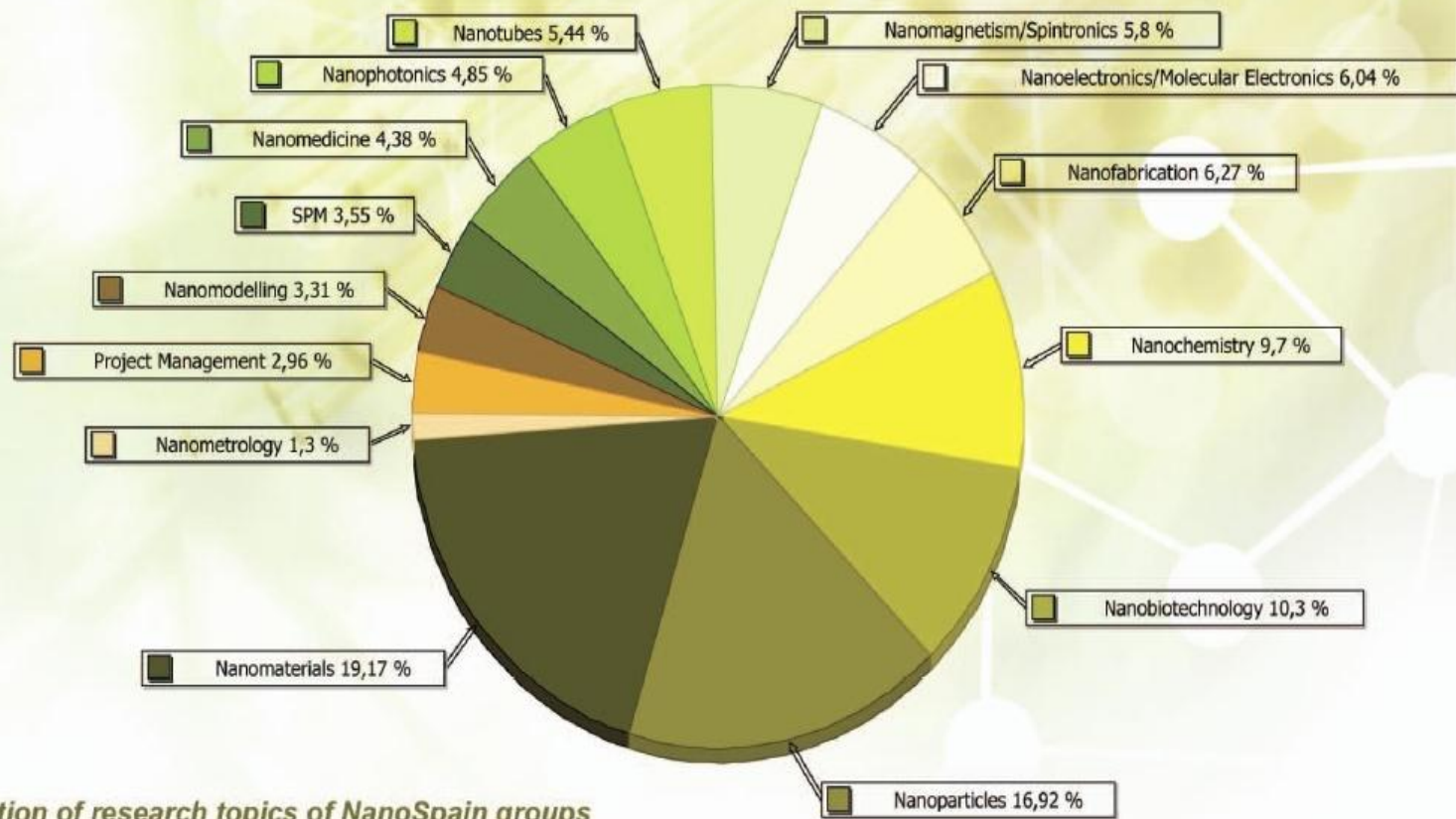
# Spain: Current situation



Fuente: Fundación Phantoms



# Situación española



Source: Phantoms



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## Awareness leaflets for workers and health and safety reps:

1. Introduction to nanotechnology
2. Health and safety management measures for nanomaterials

**Introducción**

La nanotecnología se describe como la ciencia aplicada en el diseño, fabricación y manipulación de la materia a escala atómica y molecular, en el rango de 1 a 100 nanómetros (1 metro = 1000000000000 nanómetros o 1000000000000000 nanómetros), si hablamos en términos comparativos una hoja de papel tiene un grosor aproximado de 100.000 nanómetros. La característica más importante de los nanomateriales es que cambian sus propiedades según se reduce el tamaño, es decir, algunos incrementan su conductividad eléctrica y catalítica, mejoran su resistencia, otros incrementan su resistencia, pueden presentar diferentes propiedades magnéticas e incluso pueden cambiar de color y reflejo de la luz cuando se reduce su tamaño a esta escala. Los nanomateriales además presentan una mayor superficie relativa a su masa, propiedad que les confiere una mayor capacidad de interacción con otros materiales y una mayor reactividad.

**Donde encontramos nanomateriales o productos que los contienen**

Los nanomateriales se encuentran en la industria de la automoción (botellas más ligeras y resistentes, catalizadores, piezas), en la industria química (nuevos materiales, papel, adhesivos, fibras mejoradas), en construcción (pavimentos, aislamiento, recubrimientos de fachadas, recubrimientos impermeables, morteros), en cosméticos (texturas, cremas, perfumes, cremas de manos), en electrónica (pantallas, memoria, chips), en fibra óptica, en pinturas, conductores, recubrimientos anticorrosivos, en energía (células solares, baterías), en ingeniería (recubrimientos protectores, soldadura libre de plomo), en medicina (nanotecnología de diagnóstico y terapia), en alimentos (purificación de agua, industria alimentaria lácteos y carnes), en productos de cuidado personal (productos anti-oxidantes, recubrimientos protectores para plantas, productos de limpieza para cerámica y metal), medicina (sistemas de distribución de medicamentos, contrastes, prótesis e implantes, agentes anti-inflamatorios, sistemas de diagnóstico), en agricultura (aplicación de pesticidas, control de plagas), en el textil (papel de filtro, recubrimientos anti-vaho para gafas), industria textil (recubrimientos impermeables, ropa anti-mancha) y gestión (tratamiento de residuos para áreas agrícolas).

**Riesgos potenciales**

**Riesgos para la salud**

Los riesgos de estos nanomateriales están aún por determinar. Debido a su pequeño tamaño, se incrementa la posibilidad de que los nanopartículas puedan adherirse con mayor facilidad a las membranas celulares llegando más lejos que las partículas de mayor tamaño. Por otro lado, el incremento de la superficie en función de su masa también podría afectar a la toxicidad de estos nanomateriales incrementando, si además se suman que estas nanopartículas presentan propiedades foto-oxidantes diferentes o nuevas en comparación con el mismo material pero a partículas más grandes, su toxicidad por tanto, que podría presentar nuevas propiedades toxicológicas.

A diferencia con otros materiales más grandes, la reducida tamaño produce un incremento en la solubilidad de los nanomateriales, lo que se traduce en un incremento de la biodisponibilidad, es decir, pueden ser incorporados en estructuras celulares mucho más fácilmente.

Algunos de estos nanomateriales presentan una estructura fibrosa similar a la fibra de amianto, lo que hace pensar en un similar comportamiento y posible acumulación en los pulmones con sus consiguientes efectos. Así lo muestra un estudio realizado por Andrew Maynard y otros autores (Maynard et al., 2006), en el que se utilizó un tipo de nanotubo de carbono de pared múltiple, MWCNT, que pueden inducir los mismos efectos carcinogénicos que el amianto si se inhalan en cantidades suficientes.

**Riesgos de incendio y explosión**

En relación con la seguridad de estos nanomateriales, si atendiendo a la forma o parámetros involucrados en las propiedades de ignición y explosividad de un material se piensa que algunos nanomateriales pueden ser inflamables en estas condiciones al presentar una mayor área superficial específica por tanto pueden presentar mayor reactividad y explosión. Además, que algunos nanomateriales pueden iniciar reacciones químicas dependiendo de su composición y estructura que que pueden ser peligrosas al ser liberados en el medio ambiente.

**Principio de Precaución**

La gran variabilidad de nanomateriales y sus correspondientes propiedades les hace únicos, es decir, la posibilidad de establecer una única y precisa perfil de riesgo en un grupo de nanomateriales es difícil y ello establece la necesidad de valorar los riesgos "caso por caso", lo que a su vez ralentiza el proceso de caracterización y determinación de peligros, tanto para el medio ambiente como para la salud humana.

Debido a este hecho, el incremento del conocimiento en profundidad de los nanomateriales, los expertos recomiendan aplicar el "Principio de Precaución" y considerar a los nanomateriales como peligrosos hasta que evidencias suficientes, tanto científicas como tecnológicas, demuestren lo contrario. Este principio deberá aplicarse en todo el ciclo de vida de los nanomateriales, desde la etapa de investigación en laboratorio hasta su eliminación pasando por la fabricación, manufacturación, transporte y almacenamiento.

«Principio de Precaución»: considerar a los nanomateriales como peligrosos hasta que evidencias suficientes, tanto científicas como tecnológicas, demuestren lo contrario.

Elaborado por: Ruth Martínez Sainza  
Medios: Patricia Calvo, S.A. Registro Legal: B-1020-2006

**Medidas preventivas y de control para nanopartículas y nanomateriales**

Con este documento pretendemos facilitar algunas orientaciones en relación con las medidas preventivas a tener en cuenta frente a la exposición a nanomateriales manufacturados en el lugar de trabajo.

Este documento se publica en el marco del convenio de colaboración suscrito con el Instituto Nacional de Seguridad e Higiene en el Trabajo, el organismo de Investigación de Promoción de la Seguridad de la Unión Europea, de la red de centros de la red de seguridad de la Unión Europea, para el desarrollo de actividades de promoción.



## Courses



- Universidad Complutense (Madrid)

## Articles



- Daphnia magazine: Dossier



## Books



- “Nanomundos, multiconflictos”
- “Bioética y nanotecnología” 2010

- AENOR GET 15: Nanotechnology Technical Committee:



European Trade Union Confederation  
ETUC

60M Workers

82 National Trade Unions

12 European Federations



National Trade Unions



176M Workers

151 Countries

301 National Organisations



International Trade  
Union Confederation  
ITUC





## ETUC 1st and 2nd Resolution

- 1. Inclusion of the societal dimension of nanotechnologies**  
Environment, sustainability, social rights
- 2. Implementation of the Precautionary Principle**  
Risk assessments, risk management measures, health surveillance, registry of exposures
- 3. The applicability and revision of existing regulations**  
Current legislative framework should be updated: REACH, biocides, food, worker protection, water quality, air quality and waste.  
Transparent Regulation on protection against potential risks related to nanomaterials

## ETUC 1st and 2nd Resolution

### 4. REACH and its use of the term nanomaterial

“No data no market” principle

All engineered substances in the “nanoform” be considered as new substances and be registered regardless of the volume

### 5. Transparency and traceability of nanomaterials

Development of harmonised mandatory registers of articles containing nanomaterials, including a life cycle assessment of the article

Standardisation is NOT a substitute for regulation.

### 6. Occupational Health and Safety issues

Set up a register of workers’ exposures to nanoparticles in association with health surveillance programmes



## Workers participation and involvement, information and training



### Worker participation

Anyone involved or who could be affected by the activities related to nanomaterials should be involved in the Risk Assessment and management process, otherwise, any control measured identified is unlikely to be fully effective

- Name of substances/NM and potential risks
- Relevant OELs
- Information on SDS available (Safety Data sheets)
- Significant findings of the risk assessment
- Precautions that should be taken
- Results of any monitoring exposure
- Personal Protective Equipment
- Health Surveillance



1 Introduction: activities, products, market, potential hazards

2 Nanotechnology: Regulatory Framework

3 Spain: current situation

3.1 Activities ISTAS-CCOO

4 Conclusions



## Lack of information

- 1 There is not specific legislation for nanomaterials
- 2 Evidence of **toxicological effects**
- 3 Important: to collect all information related to chemical and physical properties
- 4 **Precautionary principle**: to be considered as hazardous
- 5 Development of H&S management strategies
- 6 Information, instruction and training



**Thank you !!!**



**¿Questions?**

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