

## Nanotechnology and Nanosciences

Nanotechnology is widely predicted to be the basis of many of the main technological innovations of the 21st century. The field is growing rapidly on a global scale, boosted by major investments from Governments and industry. It bridges the whole spectrum of science, touching medicine, physics, engineering and chemistry and promises the development of new materials and processes in the nanometre ( $10^{-9}$ m) scale with new and different properties. However, it is currently acknowledged that there are major gaps in our understanding of the potential risks to health and the environment of these new materials.



### The IOM Solution

The IOM's work includes fundamental research, assessment of risk associated with the potential uses and exposures to these materials, reviews of the knowledge base and advice to industry.

IOM leads a major EU research project called PARTICLE\_RISK which is investigating the toxicity of a range of new particles including carbon nanotubes, quantum dots and metal nanoparticles. We are also providing strategic input to help the UK Government respond to the potential health issues through a series of high level reviews. We have recently been awarded a contract to develop an information resource to interpret the emerging scientific evidence to help UK industry develop and produce safer nanoparticles within a managed risk environment.

**RESEARCH CONSULTING SERVICES**

Multi-disciplinary specialists in Occupational and Environmental Health and Hygiene

## The IOM and nanotechnology

The UK Government has acknowledged the importance of a responsible approach to the development and use of nano-scale materials. The IOM has been instrumental in helping DEFRA to set the agenda for the health, safety and environmental issues raised by nanotechnology. Up to now, the focus has been on evaluating and interpreting existing knowledge, and determining the research priorities to fill the gaps. Since 2005, IOM and its partners in the SnIRC initiative ([www.snirc.org](http://www.snirc.org)) have been particularly influential in this process. We have carried out and published several major reviews for DEFRA, covering manufacture, consumer use, hazards and regulatory gaps. Further reviews are in progress, including the use of nanoparticles in food. These reviews have been critical to the development of government policy in this area. In response to our recommendation, DEFRA have established a voluntary scheme for manufacturers and users of nanomaterials to report information on hazards and risks.

## Our Commitment to You

We will continue to support government and industry through:

- independent, authoritative advice on health, safety and environment issues
- continuing influence over the research agenda
- practical techniques to measure and control workplace exposure

## Our nanotechnology services include

- Reviews and interpretation of existing knowledge
- Strategic advice to government and industry
- Prioritisation of research needs
- Study design and interpretation
- Fundamental research on the mechanisms of disease
- Development of toxicity study protocols
- Benchmark *in vitro* toxicity testing of nanomaterials
- Occupational hygiene surveys in the workplace
- Measurement of worker exposure to nanomaterials
- Investigation of consumer exposure to nanomaterials
- Occupational health services
- Information services
- Advice on the development and implementation of good practice
- Standard setting and development of guidance

## Did you know?

You are only a phone call or a mouse click away from accessing the full range of **IOM Solutions**. These are founded on an unrivalled body of knowledge, resulting from more than four decades of research, consulting and service provision. We can bring the full weight of the IOM's knowledge and experience to bear on a wide range of occupational and environmental hazards that may pose a risk to health. These include:

- Asbestos and other fibres
- Dusts
- Chemicals
- Air pollution
- Noise and vibration
- Pesticides
- Nanomaterials, including nanoparticles and nanotubes

Our work extends to the assessment of the health consequences of exposure encompassing

- Allergy and asthma
- Silicosis and other pneumoconioses
- Other lung diseases
- Cancer
- Asbestos-related diseases
- Dermatitis
- Musculoskeletal disorders
- Noise-induced hearing loss
- Hand Arm Vibration Syndrome
- Workplace stress

Our purpose is to safeguard and improve standards of occupational and public health. Our teams of scientists, clinicians and consultants include a number with international reputations in their fields of expertise. We give you access to real experts, who listen, understand, and focus on providing the solutions you seek.

**For further information please contact:**

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