

UNITED KINGDOM

Summary of UK Work on Health and Environmental Safety Aspects of Manufactured Nanomaterials

In May 2007, Defra published the results of a study looking at environmentally beneficial applications of nanotechnologies. Oakdene Hollins Limited, the contracted research team, were tasked to identify and examine nanotechnology applications which could contribute to the reduction of greenhouse gas emissions. The study considered issues of feasibility, along with any obstacles which might impede adoption, and made policy recommendations designed to foster further advance and implementation where appropriate.

“Environmentally Beneficial Nanotechnologies: Barriers and Opportunities” provides a detailed examination of current and foreseen applications of nanoscience in the areas of photovoltaics, insulation, electricity storage, engine efficiency and hydrogen use. The report is available at:

<http://www.defra.gov.uk/environment/nanotech/policy/index.htm>

Developments in the UK’s Voluntary Reporting Scheme (VRS) for Manufactured Nanomaterials

The UK’s Voluntary Reporting Scheme (VRS) for Manufactured Nanomaterials reached its first anniversary on 22nd September 2007. A total of 9 submissions have been received since the scheme’s launch, seven from industry and 2 from academia. The VRS will conclude in September 2008, after which recommendations on further initiatives will be put to UK government ministers.

The VRS is targeted at any company or organisation involved in manufacturing, using, importing or managing wastes consisting of engineered nanoscale materials. Information requested includes any data on: physico-chemical, toxicology, ecotoxicology and risk management practices. A data reporting form has been provided.

In late July 2007, the UK government’s Advisory Committee on Hazardous Substances (ACHS) carried out a review of the VRS to assess (a) if the scheme’s aims and context were being clearly articulated and; (b) whether any changes to the scheme were appropriate at this point. While fully endorsing the objectives of the VRS and encouraging further submissions from companies involved in nanotechnologies, the Committee considered that improvements to the scheme’s guidance were needed in order to increase participation levels and enhance the quality and relevance of data submitted. These changes will be introduced shortly.

The UK government remains committed to the VRS and has worked with the Research Councils and the nanotechnology industries’ representative bodies to encourage

participation. We know from our discussions with these groups that there remain a number of areas of uncertainty, which we are working to resolve. These include the use of commercially confidential information within the VRS and concerns over how scheme data may be used to assist in the international research effort. These issues are being explored within WPMN Steering Group 5 (Reporting Schemes and Regulatory Programmes).

Information on any developments related to good practice documents

Three 'Good Practice Guides' are being developed by the British Standards Institution (BSI) for publication in 2007 to meet immediate UK industry needs regarding health & safety issues around nanotechnologies:

- Guide to Safe Handling and Disposal of Free engineered Nanomaterials
- Guide to Specifying Nanomaterials
- Good Practice Guide for Labelling of nanoparticles and products containing nanoparticles (PAS)

The BSI is also nearing completion of its work to develop six new terminology documents, to be published in December as Publicly Available Specifications (PAS). These are:

- Terminology for Medical, Health and Personal Care Applications of Nanotechnologies
- Terminology for the Bio-Nano Interface
- Terminology for Common Nanoscale Measurement Terms Including Instrumentation
- Terminology for Carbon nanostructures
- Terminology for Nanofabrication
- Terminology for Nanomaterials

The three guides and six terminology documents will be made freely available on the www in January 2008. Further information is available at www.bsi-global.com/nano

Research programmes or strategies designed to address human health and/or environmental safety aspects of nanomaterials

Two studies have recently been completed to identify exposure and hazard data needs for addressing the risks presented by nanoparticles and nanotubes. The reports have been used to identify research needs to find out more about the potential risks associated with free engineered nanoparticles to the environment and human health:

- 'A scoping study to identify exposure data needs for addressing the risks presented by nanoparticles and nanotubes', published by the UK Health and Safety Laboratory (report available at

<http://www.defra.gov.uk/environment/nanotech/research/pdf/hazarddata-scoping.pdf>).

- 'REFNANO: Reference Materials for Engineered Nanoparticle Toxicology and Metrology' published by the UK Institute of Occupational Medicine (report available at <http://www.safenano.org/Uploads/REFNANOReport.pdf>). This report provides a priority list of candidates and a development schedule for their inclusion in a set of reference materials to support measurement, toxicology and risk assessment of engineered nanoparticles.

A further study has been carried out by Watts & Crane Associates, which looks at whether current standard ecotoxicity methods are appropriate to nanomaterials. The objectives of this study were:

- To assess current ecohazard test strategies and associated methods.
- To review studies that have characterised the hazard of nanomaterials, summarising and appraising key issues and challenges arising from these.
- To use this information to identify which elements of test strategies and associated methods for hazard assessment are not fit for purpose, giving reasons.
- To propose variants on current tests based on the information gathered.
- To propose an experimental programme to empirically test variants on the standard methodologies.