

Health and Safety Executive Board		Paper No: HSE/09/21	
Meeting Date:	25 th February 2009	FOI Status:	Open
Type of paper:		Exemptions:	
Trim reference:	2009/64534		
Nanotechnologies – HSE’s role and the current position			

Purpose of the paper

1. This paper provides background for an oral briefing to update the Board on Nanotechnologies: to include the work HSE has done; the current position and likely future developments.

Background

2. Nanotechnologies involve materials and structures that have at least one dimension of less than 100 nanometres (a human hair is about 80,000 nanometres wide). Their potential benefits include contributions to improved energy storage and efficiency, better diagnosis and treatment of disease, faster computer systems, and remediation of polluted air, soil and water.

3. The Government’s aim is for the UK to derive maximum benefit from these new technologies and their products, whilst ensuring that there is appropriate control of potential risks to health, safety and the environment. It has commissioned a number of studies into the subject (see annex), starting with a Royal Society and Royal Academy of Engineering (RS/RAEng) report published in 2004. So far, no evidence has emerged that either the public or environment is being exposed to any harmful nanotechnology products.

Research

4. In response to the RS/RAEng report, a cross-Government group was formed to coordinate research into this area - the Nanotechnology Research Co-ordination Group (NRCG). It is led by Defra and includes OGDs, agencies and research councils. HSE was an original member and leads on worker protection issues, including research into exposure control and fire and explosion.

5. HSE’s own involvement in nanotechnology research started with an occupational hygiene interest in the manufacture and use of ultrafine particles such as carbon black and titanium dioxide, and exposure to inadvertently produced particles e.g. welding fume

Issue - Carbon Nanotubes (CNTs)

6. In common with a number of other nanomaterials, questions have been raised about the potential risks to human health and the environment arising from exposure to CNTs. Long, thin CNTs (referred to as having a ‘high aspect ratio’) can have similar dimensions to other mineral fibres, including asbestos, fuelling speculation that, if inhaled, they could cause lung cancer and other related diseases. Research undertaken at the Queens Medical Research Institute, University of Edinburgh

published in 2008, identified pathogenic similarities between CNTs and asbestos fibres.

7. HSE leads for the Government in responding to the CNT research, as its main implications concerned human health in workplaces.

Paper clearance

8. By the SMT on 4 February 2009.

Government Commissioned Studies into the strategy for Nanotechnologies

2003 -The Government commissioned the Royal Society and Royal Academy of Engineering to look into Nanotechnologies and a report 'Nanoscience and nanotechnologies: opportunities and uncertainties' was published in 2004.

2005 - The Government published a response to the report, recognising the importance of ensuring that nanotechnologies are appropriately regulated and set out plans for Government Departments to underpin the development of regulation/research and public involvement/dialogue. HSE was specifically mentioned in relation to regulatory reviews, monitoring of workplace nanotechnology issues, workplace control issues and accidental release procedures.

2005 -The Government asked the Council for Science and Technology (CST) to review the progress Government Departments had made against its response, two and five years after publication of the response.

2006 - The Royal Society and Royal Academy of Engineering publish a response to the CST's call for evidence from Government Departments for the two year review of activities.

2007 - CST published its review and concluded that whilst the Government had made good progress in many areas - including standards and metrology, international engagement and minimising workplace and public exposure - it had not provided sufficient support for research into the toxicology and health and environmental effects of nanomaterials.

2008 - Royal Commission on Environmental Pollution (RCEP) publish – "Novel Materials in the Environment: The case of nanotechnology – press coverage states – 'Urgent regulatory action needed on nano-scale materials widely used in industry'.

2009 - HSE is currently working on a contribution on occupational issues to a cross Government response to the RCEP publication.