Safety experts ill-equipped to handle nanotechnology in workplace

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A strategic plan and more resources for risk research are needed now in order to ensure safe nano-workplaces today and in the future. That is the conclusion of Project on Emerging Nanotechnologies Chief Science Advisor Andrew Maynard in a new article, "Nanotechnology and Safety" just released by Cleanroom Technology magazine.

Last year, nanotechnology was incorporated into $30 billion in manufactured goods--a number predicted to grow to $2.6 trillion in annual manufactured goods by 2014. Already, there are almost 400 manufacturer-identified nanotechnology-based consumer products on the market--ranging from computer chips to automobile parts and from clothing to cosmetics and dietary supplements. By 2015, the National Science Foundation estimates that the nanotechnology sector will employ more than 2 million workers.

But little is known about potential risks in many areas of nanotechnology--including worker exposures. Funding for risk-focused research is a small fraction of what is being spent on nanotechnology commercial applications.

"Because nanotechnology is a way of doing or making things rather than a discrete technology, there will never be a one-solution-fits-all approach for nanotechnology and nanomaterials workplace safety," states Maynard. "That is why the federal government needs to invest a minimum of $100 million over two years in targeted risk research in order to begin to fill in our occupational safety knowledge gaps and to

lay a strong, science-based foundation for safe nanotechnology workplaces."

In the short term, because of incomplete information, Maynard stresses the need to supplement good hygiene practices in the workplace with nano-specific knowledge. Until more research data is available, Maynard proposes developing a "control banding" approach to nanotechnology workplace risk--a course of action that is between inaction and banning all nanomaterials as hazardous. This could involve selecting appropriate control approaches based on a nanomaterial "impact index" centered on composition-based hazard, and perturbations associated with their nanostructure--like particle size, shape, surface area and activity, and bulk-size hazard--and on an "exposure index" representing the amount of material used and its "dustiness."

The article is available in the magazine's December 2006 / January 2007 issue and is freely available online: http://www.cleanroom-technology.co.uk

Source: Project on Emerging Nanotechnologies