

Toxicology studies could impede advances in nanotechnology

Nanomaterials have been on the scene for over 15 years and they are being applied in a variety of sectors including coatings, textiles, energy, security, IT, food, cosmetics and medicine. Nanoparticles – particles in the 1–100nm range – have unique properties compared to their larger counterparts such as the ability to squeeze into spaces inaccessible to larger particles. But with the research still in its infancy, their long-term effects on human health and the environment remain poorly understood. Concerns have also been raised about the way nanomaterial toxicity data is reported.

Every now and then, nano-related health-scare stories crop up. In 2009, the University of Ulster in Northern Ireland issued a press release detailing an investigation into a link between manmade nanoparticles and Alzheimer's and Parkinson's disease. Vyvyan Howard, a pathologist and toxicologist, and Christian Holscher, an expert in Alzheimer's disease, were investigating whether human engineered nanoparticles, including titanium dioxide – the active ingredient in sunscreen – can induce neurodegenerative disease. They observed that the nanoparticles can have an impact on the protein misfolding associated with the diseases. Maynard's response at the time was that there was nothing wrong with the work, but that the risk was probably low as previous research had shown that the nanoparticles can't penetrate the skin and that there were even indications that the nanoparticles form a strong protective barrier on the skin. Nevertheless, the link had made newspaper headlines.

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