



Biointerphases

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Nanoparticles: A Public Health Hazard In The Making?

Human exposure to nanoparticles is increasing rapidly. The bulk of this nanoparticulate pollution stems from engine exhaust and industrial manufacturing. Other human activities, such as cooking and cleaning, contribute to indoor nanoparticle pollution which may have adverse effects on human health. With nanotechnology being a top research priority in most of the industrialized world, engineered nanoparticle materials are now produced at an increasing rate as well.

Engineered nanoparticles can be found in common consumer products such as food additives, cosmetics, and more.

Nanosized particles are able to enter the body and rapidly migrate to our inner organs, where they may enter cells and influence basic cellular processes, such as proliferation, metabolism, and death. Many diseases are associated with dysfunction of these basic processes. The minute size of nanoparticles makes it more difficult for the body to rid itself of them, and long-term effects of nanoparticles on human health and on the environment are still largely unknown.

While some nanoparticles are considered benign or even beneficial to human health, it is clear that others may constitute a serious threat to public health. To prevent nanotechnology from

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becoming a public health hazard, nanotoxicology must be made a research priority. It has been shown that simply taking dose, mass, and duration of exposure into account, as in traditional materials toxicology, is insufficient. Rather, each nanoparticle type must be examined with regards to these and additional factors, such as shape. Methods for reducing nanoparticle toxicity must also be studied further. National and international policies are needed to limit all types of possibly hazardous nanoparticulate pollution.

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Nanomaterials and nanoparticles: Sources and toxicity, Cristina Buzea, Ivan I. Pacheco and Kevin Robbie