Applications, Toxicity, Potential Risks to Human and Environment and Control Mechanism of Nanomaterial's

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ABSTRACT

Nanotechnology has revolutionized the world through better materials and consumer products in many fields of life. This technology has produced a new generation of materials and devices. This creation of a big number and variety of new materials and products has raised the issue of safety for producers, consumers, and environment. Nanoparticles can harm individuals, workers, and the environment because of their potential as irritants, reactive materials, and interactive substances due to small size. Nanomaterial's has potentials of improvement to quality of life; however their impact on human and environment still need to be explored. This paper reviews the nanoparticles applications, sources and ways of exposure to human and environment and their toxic effects. It describes about the sources and possible modes of exposure of nanoparticles. Inhalation, digestion and dermal exposures have been considered in detail. Paper also discusses about the properties of nanoparticles which make them unique but toxic as well. A detailed mechanism to control the nanoparticles emission and exposure to environment and human being is also formulated. From the literature a very small data is available for long term human exposure; most of the predictions are made from animal testing. It is very serious concern at this stage to know toxic effects of nanoparticles in detail on human being and environment as well. Advance methods of controlled synthesis, production and consumer applications needs to be explored and implicated according to the advancement of this field.

Keywords: nanomaterial's applications, environmental pollution, human exposure, control mechanism