

ENVIRONMENTAL TOXICOLOGY AND HUMAN HEALTH

*Current
Challenges
and Future
Perspectives*

Edited by
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Nanomaterials

Environmental Presence and Health Effects

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Summary

Nanotechnology is currently being used in diverse fields owing to the unique features of the nanomaterials such as enhanced mechanical, chemical, and optical characteristics, greater ratio of surface area to volume, and lower melting points. These distinct features have caused the development of nanomaterials as highly sought-after materials in biomedical, biotechnology, cosmetics, imaging techniques, energy, and electronics fields. Nanomaterials include metal oxide and polymeric nanoparticles, carbon nanotubes, quantum dots, and dendrimers which have efficiently exhibited their presence and essence in the aforementioned advanced techniques and fields, however, their presence in these diverse areas has directly enhanced their presence in the environment which has ultimately caused human exposure and other living organisms to these nanomaterials through water, air, and the food chain. Specifically, nanoparticles are known to persist for long durations due to their oxidative properties, thereby exhibiting toxicity in human cells. Nanoparticles are known to accumulate in and exhibit adverse effects on the liver, heart, kidney, and other organs. Considering these negative effects of the nanomaterials, it is imperative to design a regulatory framework and specific guidelines for their safe disposal. Therefore, this chapter focuses on discussing the toxic effects of various nanomaterials, their fate in the environment, as well as their impact on human health to widen the knowledge base of the readers with the current scenario of the environmental presence and adverse consequences of nanoparticles on human health which would aid in deciphering measures to counter the growing adverse influence of these nanomaterials.

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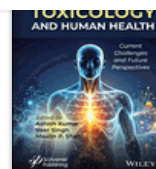
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