

Effects of Nanoparticle on Health and Environment

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DESCRIPTION

Nanotechnologies and nanomaterials utilize nanometer-sized particles and have a lot to offer in terms of improving our quality of health. However, like with any new technology or advancement, there are possible disadvantages.

Nanomaterials present a difficulty in identifying when their physical, chemical and biological properties differ from ordinary materials, and it causes potential side effects. In actuality, modern research procedures must be developed because existing methods may not apply to testing nanomaterials. New nanomaterials are constantly being created for a wide range of applications. At the same time, our scientific understanding and capacity to explain and interpret the observed properties of nanomaterials is expanding, but remains relatively limited. More crucially, understanding of the possible negative impacts of nanomaterials is advancing at a slower rate than technological improvements.

Because the impact of nanoparticles on the environment and humans is unknown, they are a source of concern for health and safety. Some researchers have looked into the toxicological and environmental consequences of naturally occurring NPs (NNPs) and human-made or engineered NPs, (ENPs) which are known to have a wide range of effects once they enter an organism. The research of NP sources, their behaviour, exposure, and effects on the environment and humans was conducted. An integrated strategy was utilized to compile available scientific material within an interdisciplinary logical framework, identify knowledge gaps, and define NNPs and ENPs' environmental and health links. The impacts of NNPs on dust cloud development and radiation concentration were found to be significant environmental alterations with direct and indirect implications for a variety of human health problems.

Exposure to NNPs and ENPs, as well as their accumulation in biological matrices such as microbiota, plants, and humans, can have a variety of negative consequences. The impact of specific NPs on human health *via* ROS production has been identified as one of the primary causes of sickness development. A

proposed cause-effects diagram for NPs is created with both NNPs and ENPs in mind. Natural and artificial nanoparticles (NPs) in the environment are influenced by a wide range of physicochemical processes and exhibit varying behavior in organisms, soil, and water. Engineered nanoparticles (ENPs) have been found to accumulate in a variety of organisms and environmental compartments, including blue and green algae, fish and other aquatic organisms, soil, and sediments. Natural sources of NPs can be classified as purposeful or unintended anthropogenic activity. NNPs have been present in the environment from the beginning of time and are widely dispersed across the earth's atmosphere, oceans, surface and ground water, soil, and even living beings.

Forest fires, volcanic activity, weathering, creation from clay minerals, wind and water soil, and dust storms from deserts are major natural processes that release NPs into the atmosphere. Within a year, atmospheric dust alone is estimated to contain several million full of natural NPs. The accumulation of NPs in the environment is likely to disrupt various environmental processes that rely on the presence of physical entities. Some of these processes include dust cloud formation, hydroxyl radical concentration in the environment, ozone depletion, and stratospheric temperature change.

CONCLUSION

Researchers found that impacts of NP on the environment have advanced significantly during the last decade. A more systematic approach to determining the significance of soil features in NP Reality and consequently the risk of NP contamination of groundwater is required. For example, that ions released by NP can entirely explain the effects observed in organisms in some cases. However, it is currently unable to characterize the conditions under which this simple hypothesis should have been discarded, and other methods must be examined. The impact of coating on the Reality and consequences of NP is currently under represented in the present study, whether as planned functionalization or based on natural processes.

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