

## Editorial Note on Bioremediation using Nanoparticles

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### EDITORIAL

Lately, sustainable remediation methods have gained more prominent significance by focusing on the reduction in the concentration of contaminants there by reducing the risk level and also to wipe out the world wide natural impacts caused due to the greenhouse gas emissions that are causing damage to the ozone layer.

Nano-biotechnology has greatly contributed to the remediation of soil, water and air pollutants into environmentally sustainable compounds in recent years. Its attribute is based on the fact that it is divided into three groups, namely treatment and remediation, sensing and detection, pollution and prevention. The advent of Nano-bioremediation could be seen, by pollution removal and cleanup strategies that cultivate the ecosystem. As previously mentioned, combining traditional bioremediation with Nano biotechnological approaches or direct Nano-remediation techniques could be a viable alternative for flooding contaminants from the climate.

Removal of toxins from the atmosphere (such as heavy metals, organic and inorganic pollutants) from contaminated areas using nanoparticles/nanomaterial made with the aid of plants, fungi and bacteria is known as Nano bioremediation. There is a wide use of Nano technology in this field.

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There are two methods that have been identified in the treatment system for the application of the integrated Nano-bio process .First is the concurrent or mixed processes that involves in adding Nano particles and biological agents to the system at the same time. Second is the sequential method in which the contaminant is first exposed to the Nano particle and then conjugated with biological agent to carry out the further process.

Integration of Nano remediation with bioremediation, either sequentially or simultaneously, appears to be a viable alternative to traditional remediation technologies. More research and development activities are also needed to introduce these types of technologies to the market for widespread adoption. Furthermore, the influence of environmental factors such as pH, temperature, ionic strength, the existence of competing or inhibitory substances, and so on the remediation efficacy of Nano bioremediation is required.