

Biodegradation of POPs from sewage sludge using combined bio and nanotechnology in bioreactors.

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ABSTRACT

Persistent organic pollutants (POPs) have been used in a wide range of agricultural and industrial commodities, resulting in vigorous deterioration of environment and human health. Common beliefs point at India as a hot spot of POPs contamination and human exposure but, no systematic analysis was ever performed so far considering all available past data on POPs occurrence. POPs are produced intentionally or unintentionally by human and industrial activity. Among them, currently polybrominated diphenylethers (PBDEs) are of most concerned POPs due to their wide spread use as flame retardants in various commercial products. PBDEs present in these products released into the environment and eventually enter into waste landfill sites and sewage. The sewage sludge becomes a major sink to PBDEs and source to release PBDEs into the aquatic sources. Therefore, systematic studies to monitor the levels of PBDEs in sewage sludge and their remediation are the need of the hour. Biodegradation has been generally recognized as one of the potential method for degradation of environmental pollutants. Some isolated aerobic bacteria from the environments exhibit unique catabolic pathways capable of degrading persistent organic pollutants. This paper mainly focuses on the biodegradation of POPs from sewage sludge using combined bio and nanotechnology.

Keywords: POPs, PBDEs, human health, biodegradation, nanotechnology.

