Study on Mercury exposure and different approaches for management of Mercury toxicity

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Mercury (Hg) is a highly toxic heavy metal that causes significant risks to human health and the environment. This Poster explores the sources and routes of mercury exposure to humans, its toxicological effects, and the various methods of phytoremediation and bioremediation to mitigate (Reduce) mercury contamination in the environment. Mercury exposure to humans primarily occurs through consumption of contaminated seafood, inhalation of mercury vapour, and occupational exposure, which can lead to adverse health effects, including neurological disorders, cardiovascular issues, and developmental defects. Furthermore, mercury contamination in the environment can persist and bioaccumulate in the food chain, further exacerbating the risks to human health. Phytoremediation, a sustainable and cost-effective method, involves the use of plants to extract, stabilize, or transform mercury in contaminated soils or water. Various plant species have demonstrated the ability to accumulate and detoxify mercury through mechanisms such as Phyto chelation and Rhizofiltration. Additionally, genetic engineering of plants can be achieved to enhanced mercury uptake and accumulation is also a promising method for efficient phytoremediation. Bioremediation, on the other hand, involves the use of microorganisms, such as bacteria and fungi, to remediate mercury-contaminated sites. These microorganisms can reduce mercury to less toxic forms (e.g., elemental mercury to less soluble mercuric ions) or form complexes that immobilize mercury. Apart from microbes and plants, Seaweeds or seaweed derived products can be proved an efficient alternative for bioaccumulation of Mercury. Bioremediation techniques are being continuously developed and optimized to enhance their efficiency and applicability.

Keywords:- Mercury (Hg), Toxicity- Neurological disorders, Phytoremediation, Bioremediation.