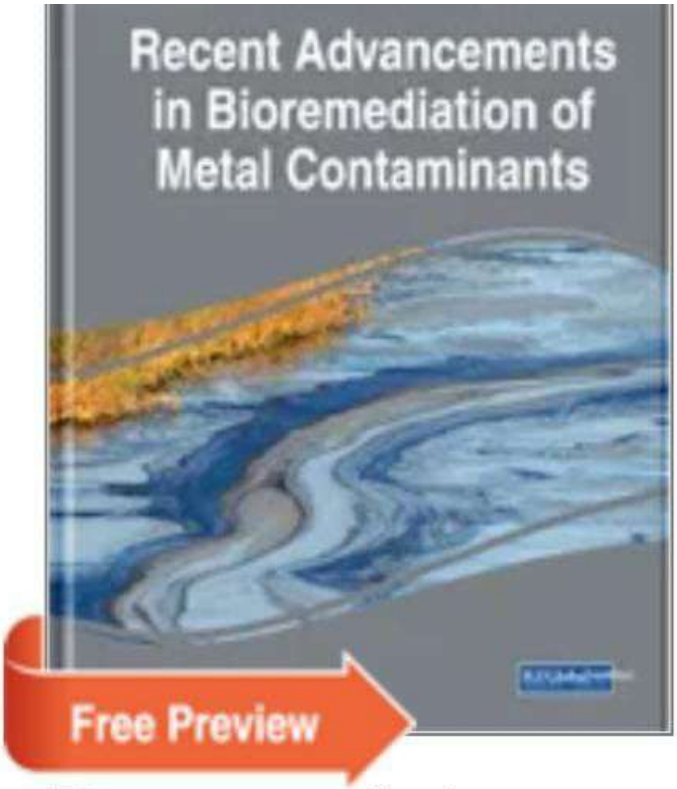

Recent Advancements in Bioremediation of Metal Contaminants

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Ricinus communis: A Potent Lead (Pb) Accumulator

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ABSTRACT

Contamination of soil and ground water with heavy metals is a great threat to human health, vegetation, and wildlife. Pb is the second most hazardous substance according to ATSDR. The main sources of Pb entering an ecosystem are atmospheric Pb (mainly from automobile emission), paint chips, fertilizers, and pesticides and Pb acid batteries or other industrial Pb products. Phytoremediation could provide sustainable techniques for metal remediation. Roots of Ricinus communis were found to accumulate maximum amount of Pb (275.12mg/kg dry wt,). Depending on soil Pb content, the concentration of Pb in shoots of Ricinus communis *also varied. In most cases only a small part of Pb was translocated in the aerial parts. In 95% of the plant samples collected, the root Pb concentration are much greater than those of the shoot lead content, indicating low mobility of Pb from roots to the shoots. Their ability to accumulate higher amounts of Pb in their roots and considering their rapid growth rate and biomass, this plant has the potential for removal of Pb from contaminated soil.*

INTRODUCTION

Indiscriminate use of different heavy metals has been increased due to rapid urbanization.Heavy metals cannot be destroyed or degraded as they occur as natural constituent of earths crust. These heavy metals enter the body system through food, air, and water and bio-accumulate over a period of time. (UNEP/GPA,2004).

In todays industrialized society heavy metals are ubiquitous environmental contaminants. Heavy metal pollution in soil differ from air or water pollution as heavy metals retain much longer than any other component of the biosphere. (Lasat., 2002)

Heavy metal contaminants in soils emitted through metalliferous mining and smelting, metallurgical industries, sewage sludge treatment, warfare and military training, waste disposal sites, agricultural fertilizers and electronic industries (Alloway1995). For example, mine tailings rich in sulphide minerals

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