ASSESSMENT OF THE PHYTOREMEDIATION POTENTIAL OF *Spartina alterniflora* FOR PETROCHEMICAL INDUSTRY WASTE

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INTRODUCTION: Persistent organic pollutants (POPs) are a major environmental concern due to their toxicity, persistence, and bioaccumulative capacity in animal and plant organisms. Polycyclic aromatic hydrocarbons (PAHs), which are lipophilic substances, are of special interest due to their high persistence in the environment and their carcinogenic, mutagenic, and teratogenic potential. Considering the negative effects on the environment and human health, there is significant interest in developing technological alternatives for the remediation of areas contaminated by oil and its derivatives. The use of on-site technologies reduces transportation costs and, most importantly, the risk of potential contaminant dispersion, causing secondary contamination. The remediation of contaminated soils using plant species as bioindicators and bioaccumulators of various pollutants, including hydrocarbons, has proven to be a promising and environmentally beneficial solution to reduce their concentrations in the environment. Spartina alterniflora is a native species of Brazil, and the main component of the marshes in the estuary of the Patos Lagoon, RS, Brazil. This species is recognized for its potential as a biomass resource, CO_2 sequester, and pollution eliminator. OBJECTIVE: This work aims to evaluate the remediation efficiency of soils contaminated with petrochemical industry waste from the landfarming area of the Southern Petrochemical Complex (Triunfo, RS) using *Spartina alterniflora*. MATERIALS AND METHODS: PAH concentrations in the roots, stems, and leaves of *S. alterniflora* were measured to assess absorption and translocation. Soil and plant PAHs were analyzed by gas chromatography-mass spectrometry (GC-MS) following EPA Method 8270C. RESULTS AND CONCLUSION: The roots showed the highest concentrations of PAHs, both in contaminated and uncontaminated soils. In the stems, leaves, and dead leaves, higher concentrations of 2-4 ring compounds were observed, such as phenanthrene, anthracene, pyrene, and chrysene. Meanwhile, PAH concentrations in the soil decreased in both contaminated and uncontaminated soils. High-molecular-weight PAHs such as benzo(b)fluoranthene and benzo(e)pyrene (5-6 rings) accumulated mainly in the roots, without significant reductions in soil concentrations. The use of *S. alterniflora* demonstrated efficiency in the removal of PAHs, especially those with 2 to 4 aromatic rings, from the soil, either by direct plant absorption or by stimulation of microorganisms associated with root biodegradation.

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