

Phytoremediation of Petroleum Hydrocarbons in Polluted Waters Using *Pistia stratiotes*: Gaps and Future Perspective

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Abstract

Environmental pollution in the oil and gas industry is the unintended but inevitable consequences of oil and gas exploration and production. Over the years, different strategies have been implemented for the remediation of oil-polluted waters. The increasing call for the use of ecologically based solutions for remediation have intensified the quest for engineers, researchers and scientists to find pragmatic solutions from the natural world. Among the several biological application for the remediation of petroleum-polluted environment, aquatic macrophytes are becoming a promising and ecological based solution for the removal of hydrocarbons pollutants in water. *Pistia stratiotes*, - a monotypic genus in the family Araceae, is a floating aquatic macrophyte with extensive application in the phytoremediation of organic pollutants, heavy metals and sparingly in agrochemicals, pharmaceuticals and personal care products, nanomaterials, radioactive materials and petroleum hydrocarbons in wastewater effluents and aquatic environment. The dearth of studies on the application of water lettuce for the remediation of petroleum hydrocarbons and oilfield chemicals creates a gap in the potentials of the plant for long and short-term assessment of hydrocarbon uptake, removal and degradation in contaminated waters. There is need for laboratory and field trials on the application of *P. stratiotes* to remediate hydrocarbons and other related pollutants in oil and gas exploration to elucidate the effectiveness and efficiency of the plant as a sound ecological base approach for sustainable remediation of hydrocarbons in a polluted environment.

Keywords: Phytoremediation, Constructed wetlands, *Pistia stratiotes*, Petroleum hydrocarbons, Floating macrophytes,