

Different Tools and Complex Approach for Improving Phytoremediation Technology

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Abstract : The complex phytoremediation approach given in the presented work implies joint application of natural sorbents, microorganisms, natural biosurfactants and plants. The approach is based on using the natural mineral composites, microorganism strains with high detoxification abilities, plants-phytoremediators and natural biosurfactants for enhancing the uptake of intermediates of pollutants by plant roots. In this complex strategy of phytoremediation technology, the sorbent serves to uptake and trap the pollutants and thus restrain their emission in the environment. The role of microorganisms is to accomplish the first stage biodegradation of organic contaminants. This is followed by application of a phytoremediation technology through purposeful planting of selected plants. Thus, using of different tools will provide restoration of polluted environment and prevention of toxic compounds' dissemination from hotbeds of pollution for a considerable length of time. The main idea and novelty of the carried out work is the development of a new approach for the ecological safety. The wide spectrum of contaminants: Organochlorine pesticide - DDT, heavy metal -Cu, oil hydrocarbon (hexadecane) and wax have been used in this work. The presented complex biotechnology is important from the viewpoint of prevention, providing total rehabilitation of soil. It is unique to chemical pollutants, ecologically friendly and provides the control of erosion of soils.

Keywords : bioremediation, phytoremediation, pollutants, soil contamination

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