عنوان مقاله:

Indole-۳-Acetic Acid and Humic Acid Increase the Bio-Degradation of Diesel Oil in Soil Polluted with Pb and Cd

محل انتشار:

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خلاصه مقاله:

Introduction: Soil remediation is one of the most important fields in environmental studies. This study was conducted to investigate the effect of indole-۳-acetic acid (IAA) and humic acid (HA) on increasing the bio-degradation of diesel oil in soil polluted with (lead) Pb and cadmium (Cd). Materials and Methods: Treatments included foliar application of IAA (۰ (control) and ۳۰ ppm) and soil application of HA (۰ (control) and ۲۰۰ mg/kg soil) in the soil contaminated with Cd (۰ (control), ۱۰ and ۱۵ mg/kg soil), Pb (۰ (control) and ۱۶۰۰ mg/kg soil), and diesel oil (۰ (control), and ۸% (W/W)). The sunflower was planted in all soil samples. The plants were harvested after ۷۰ days and Pb and Cd concentrations of plants were measured using Atomic Absorption Spectroscopy. Results: Foliar application of IAA at the rate of ۳۰ mg/l significantly increased the Cd and Pb phytoremediation by ۱۴.۸% and ۱۳.۴%, respectively. For HA application, it was increased by ۱۱.۳% and ۱۰.۲%, respectively. A significant increase was found in degradation percentage of diesel oil in soil by ۱۲.۶%, when the soil was treated with ۲۰۰ mg HA/kg soil. Conclusion: It can be concluded that application of organic amendments such as IAA or HA can be a suitable way for increasing plant growth and increasing plant phytoremediation efficiency, especially in the soil contaminated with diesel oil. However, the phytoremediation efficiency is dependent on the plant physiology and the type of soil pollution that should be considered.

کلمات کلیدی:

Biodegradation, Lead, Cadmium, Environmental Pollution, Contaminated Soil.