Journal of Education for Pure Science- University of Thi-Qar
Vol.15, No1 . (2025)
DOI: https://doi.org/10.32792/jeps.v15i1.585
Website: jceps.utq.edu.iq Email: jceps@eps.utq.edu.iq

Bioremediation of Petroleum-Contaminated Soil Using Earthworms: A Study on Hydrocarbon Reduction in Southern Iraq

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Received 19 /11 /2024, Accepted 13 / 1 /2025, Published 1/ 3 /2025

Abstract:

The current laboratory study was conducted to verify the possibility of biological treatment (Vermiremediation) of the earthworm Lumbricus terrestris in soil contaminated with crude oil, four concentrations (1%-2%-5%-8%) were prepared from soil contaminated with crude oil that was brought from the Shuaiba area near the south refineries in Basrah Province, southern Iraq, after growing them with earthworms and examining them every 10 days for 40 days, the statistical results showed that the earthworms significantly reduced total petroleum hydrocarbons (TPH).Mean concentration of total petroleum hydrocarbons for the 1% pollution concentration before treatment was 16.636 µg/g dry weight, and after 40 days of treatment it reached 5.330 µg/g dry weight, while at a contamination concentration of 2% it reached 33.426 µg/g dry weight before treatment and at the end of treatment the mean concentration reached 5.730 µg/g dry weight, as for contamination concentration of 5%, it reached 51.370 µg/g dry weight before treatment and decreased after 40 days of treatment to 7.340 µg/g dry weight. Pollution concentration 8% it was 70.540 µg/g dry weight before treatment, and after the end of treatment it decreased to 11.350 µg/g dry weight. The statistical results also showed that there is a direct correlation between (TPH) and pH and an inverse relationship with soil temperature.

Keywords: *Lumbricus terrestris*- petroleum hydrocarbon -Soil Contaminated- Vermiremediation .