

Title: Catalysing the Phytoremediation Efficiency of *Helianthus* annuus and *Brassica* juncea in Spent Engine Oil Contaminated Soils: A Circular Economic Approach

Oleseaden Ojuegba Lale
Coventry University Centre for Built and Natural Environment, CV15FB, United Kingdom

Soil pollution with spent engine oil and eutrophication from wastewater treatment plants are environmental hazards that occur frequently across the globe particularly in developing countries. This study explored detoxifying SEO polluted soils with phytoremediation (a green and cost-effective remediation method) using *Helianthus* annuus and *Brassica* juncea. Results from a 6-week pilot study (although not statistically significant) showed positive indications for phytoremediation as TPH degradation in planted treatments were almost double that of the unplanted treatments. The lack of statistical significance might have been a result of poor soil conditions, the short duration of the experiment and the accuracy of the determinative method (soxhlet method) used for analysing TPH. The present study aimed to overcome the challenges in the pilot study by extending the experiment duration to 16 weeks, employing qualitative determinative methods (Gas Chromatography/ Spectrometry and Gas Chromatography/Flame Ionization Detector) and introducing a nutrient amendment to enhance biomass production and ultimately enhance the rate of phytoremediation. The present study adopts a circular economic approach to enhance phytoremediation by using the nutrient rich struvite which is a product of nutrient recovery from wastewater treatment facilities. This approach might have potential to reduce eutrophication induced from wastewater effluents and also reduce the depletion of global phosphorus reserves via nutrient recycling.

Biography

Oleseaden Lale is a second year PhD student at the Center for Built and Natural Environment and the Center for Agroecology, Water and Resilience in Coventry University, United Kingdom. He's researching the phytoremediation potentials of *Helianthus* annuus and *Brassica* juncea in Spent Engine Oil polluted soils and also examining the ability of struvite to enhance phytoremediaon.

Presenting author details
Full name: Oleseaden Ojuegba Lale
Contact number: +447442870939
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