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Phytorextraction of polychlorinated biphenyls (PCBs) from contaminated soil by *Chromolaena odorata* (L) King and Robinson

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The ability of *Chromolaena odorata* propagated by stem cuttings and grown for six weeks in the greenhouse to thrive in soil containing different concentrations of PCB congeners found in Aroclor 1254 and 1260, and to possibly remediate such soil was studied under greenhouse conditions. *Chromolaena odorata* plants were transplanted into soil containing 100, 200, and 500 ppm of Aroclor in 1L pots. The experiments were watered daily at 70 % moisture field capacity. Parameters such as fully expanded leaves per plant, shoot length, leaf chlorophyll content as well as root length at harvest were measured. PCB was not phytotoxic to *C. odorata* growth but plants in the 500 ppm treatment only showed diminished growth at the sixth week. Percentage increases in height of plant were 45.9, 39.4 and 40.0 for 100, 200 and 500 ppm treatments respectively. Such decreases were observed in the leaf numbers, root length and leaf chlorophyll concentration. The control sample showed 48.3 % increase in plant height which was not significant from the treated samples, an indication that *C. odorata* could survive such PCB concentration and could be used to remediate contaminated soil. Mean total PCB absorbed by *C. odorata* plant was between 6.40 and 64.60 ppm per kilogram of soil, leading to percentage PCB absorption of 0.03 and 17.03 % per kilogram of contaminated soil. PCBs were found mostly in the root tissues of the plants, and the Bioaccumulation factor were between 0.006-0.38. Total PCB absorbed by the plant increases as the concentration of the compound is increased. With these high BAF ensured, *C. odorata* could serve as a promising candidate plant in phytorextraction of PCB from a PCB-contaminated soil.

Biography

Raymond Oriebe Anyasi is a doctoral student with the University of South Africa Department of Environmental Science, working on environmental pollution control and management projects. Mr Anyasi is an undergraduate tutor in Engineering chemistry and General biology and has few publications in various peer reviewed journals.

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