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Understanding the Effect of Oil on Phytoremediation of PCB Co-Contamination in Transformer Oil Using *Chromolaena Odorata*

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Abstract - This study involves the greenhouse assessment of the effect of oil on *Chromolaena odorata* ability to remove PCB from soil treated with transformer oil co-contaminated with Aroclor 1260. Plants were transplanted into one kilogram of soil contained in 1L pots differently containing 100, 200, and 500 ml of transformer oil (T/O), co-contaminated with 100 ppm of Aroclor. Treatment was done in two microcosm; direct contamination and soil culture method. Measured plant growth parameters showed that *C. odorata* growth was differently affected by the different concentrations of transformer oil. Inhibition of the oil to plant growth increased with concentration. At the end of six weeks of growth, plants showed a diminished effect in T/O amended soil to the parameters tested. Plants size was increased by 1.4, 0.46 and -1.0 % in direct treatment and 17.01, 6.09 and 1.08 % in soil culture at the 100, 200 and 500 ppm respectively. Untreated control showed 43.07 % increase. Slight PCB recovery was observed in the root tissues of *C. odorata* but the plant caused a high reduction of 66.6, 53.2, 41.5 % and 77.3, 74.7, 58.8 % of soil PCB at both treatments with their respective concentration of oil. However, unplanted control was reduced by 21.4 and 16.7 % in the two treatments at 100 ppm of oil. This study has shown that with improved agronomic practices, there is possibility of phytoremediation of soil PCB from PCB contained transformer oil contaminated soil using *Chromolaena odorata,* hence should be optimized in the field.

Keywords: Phytoremediation, Transformer oil contamination, *Chromolaena odorata*, PCB, Soil remediation, South Africa.