

**SPATIAL DISTRIBUTION AND POLLUTION OF HEAVY METAL
CONCENTRATION SURROUNDING PALM OIL MILL**

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ABSTRACT

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The heavy metal accumulation in soil to the surrounding area is caused by distribution of pollutant through wind from anthropogenic activity. The soil can be toxic when it contains non-essential heavy metal. The objectives of this study are to assess the copper (Cu), zinc (Zn) and lead (Pb) concentrations and to determine the contamination of heavy metal with contamination factor and geo accumulation index (I_{geo}). Soil samples were taken at depth of 10 cm at different distances from palm oil mill, 0.5 km, 1 km, 2 km, 3 km, 4 km, and 5 km. The samples were air dried for 1 week, sieved, grinded and digested with nitric acid (HNO_3) after heating in the furnace at $450^\circ C$ for 16 hours or overnight. Then, the samples were analysed using Flame Atomic Absorption Spectroscopy (FAAS) to determine the concentrations of the selected heavy metal studied. Three replicates for each sample were used to obtain the average value. The mean concentration obtained for the whole sampling locations were found in the ranged of 17.0 to 51.0 mg/kg for Cu, 12.0 to 43.0 mg/kg for Zn and 0.8 to 21.6 mg/kg for Pb. In conclusion, Cu had the highest concentration compared to Zn and Pb in the top soil. Based on statistical analysis using contamination factor and geo accumulation index, the studied area is moderate contamination by the heavy metal especially for Pb followed by with Cu and Zn.

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