

Heavy metal contamination of soil around Buffalo city metro municipality open Landfill

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Introduction – Soil is the foundation of the entire biosphere. Due to different activities of various soil organisms, permanent transitions take place in soil between growth and decay, life and death. Thus, in a biological and biochemical way, soil represents the most important complex interface for the global interchange of matter and energy. Yet, for decades soils have increasingly been subject to pollution and other adverse side-effects of different human activities which negatively affect soil organisms [1]. Thus, protecting soil and preserving its biological health and overall quality becomes a key international goal. The objectives were to determine and analyses distribution of heavy metal present in the soil resulting from waste decomposition in the landfill. (2) Which heavy metal have higher amount of concentration in sub surfaces and top of the soil



Image 1. Example of an image inserted on the text

The study was carried out at Berlin, Amalinda, King Williams Town and Beacon Bay Land fill sites located in Buffalo city Municipality of the Eastern Cape Province, South Africa, geomorphically the area is mountainous form having small slopes with small hills. The hilly areas are covered with forest. The study area is more suitable for different crops, but major crops grown in study area are Cabbage, Spinach and maize. Forty-eight surface (0–15 cm) soil samples were collected from different main functional sections in Buffalo city metro municipality of the Eastern Cape province (image.1), and each main soil sample consisted of 0–15 subsamples collected randomly from within and surroundings of each site, pooled and homogenized to form a representative sample [2,3]. Among 48 soil samples, 12 each were collected from Round-hill site in Berlin, Stony drift site in Amalinda, Beacon Bay site in East London and King William Town site in King Williams dumping sites. Soil augers were used to dig up the soil, and were put into polyethylene plastic bags. The composite soils were stored in glass jars at 4 °C after being air-dried at room temperature for 10 days crushed and sieved through a 2 mm mesh.

3. Results and Discussion - From the physicochemical characteristics and heavy metal concentration present in the leachate and soil samples, it is claimed that KWT, RHB, SDA and BBE open dumping site is going to cause environmental problems in both short and long term and this site should be renewed.

Table 1: Concentration of metals (mg/l) for soils in selected landfills around BCM municipality and Environ

Metal mg/l	Permissible Lim (mg/l)	KWT	RHB	SDA	BBE
		0-15cm	0-15cm	0-15cm	0-15cm
Cd	0.005	0.009	0.2	0.004	0.01
Co	0.05	0.2	0.2	1.1	0.4
Cr	0.05	0.7	1.3	3.3	0.9
Cu	0.01	0.4	0.8	0.4	0.5
Pb	0.01	ND	ND	ND	ND
Zn	0.01	0.3	5.3	0.3	0.6