HEAVY METAL CONCENTRATIONS IN SOIL, FLUTED PUMPKIN LEAF AND SURFACE WATER IN UMUEBULU COMMUNITY IN RIVERS STATE, NIGERIA

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ABSTRACT

Concentrations of six heavy metals which include: Arsenic (As), cadmium (Cd), lead (Pb), mercury (Hg) and Zinc (Zn) in soil, fluted pumpkin leaf (*Telfaria occidentalis*) and surface water (Otamiri river) were estimated in three different locations in Umuebulu community in Etche Local Government Area of Rivers State, Nigeria (characterized by oil exploration and gas flaring). The soil and fluted pumpkin leaf samples were analyzed using x-ray fluorescence (XRF) and the surface water analyzed using Atomic Absorption Spectrophotometer (AAS). The pH of the soil (6.15-6.20) and surface water sample (6.50-6.95) range from acidic to near neutrality. The electrical conductivity for soil / surface water include 197.50/170.50,195.50/166.50 and 185.50/165.00(µS/cm) for locations 1,2 and 3 respectively. Values for location 1 differ significantly ($P \leq 0.05$) for both samples compared with locations 2 and 3. The results for heavy metals show that zinc had the highest concentration (ppm) in fluted pumpkin in all three locations. The zinc levels at locations 2 (59.80) and 3 (60.50) were significantly ($p \leq 0.05$) higher than those of location 1 (55.00). These values were not within the permissible limits of FAO/WHO. Apart from chromium (098-1.00ppm) the other heavy metals analyzed from pumpkin also had concentrations higher than FAO/WHO permissible limit. The concentrations of Zn (36.80-37.83ppm) were high for soil sample as well as for surface water (0.02-0.04ppm). These values were within the permissible limit of FAO/WHO. It is therefore evident that oil exploration and gas flaring has a negative impact in the health of people of this community following the presence of heavy metals in the pumpkin leaf.

Keywords: Heavy Metals, Soil, Fluted Pumpkin Leaf, Surface Water, Umuebulu.