Biogas production by plant waste treatment

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Water and soil samples were collected in farmland areas of Nigeria Police academy, Wudil –Kano State and were analyzed for heavy metals (Cd, Fe, Cu, Pb and Zn) and some physical parameters (pH, Temperature, Conductivity and Turbidity) using standard methods and Atomic Absorption Spectroscopy (AAS).The pH results for water samples ranges from 6.6±0.36 -7.5±0.32, Temperature ranges from 23.5±0.44-27. ±1.16 0C, Conductivity ranges from 63.47±1.32-227.34±3.31μs/cm and Turbidity ranges from 1.5±0.22- 3.0±0.92 NTU. The results for all the physical parameters were within the limits of WHO limits. While the results for metals concentration in water samples ranges from 0.002±0.001-0.022±0.001mg/L for Cd,1.30±0.002-3.25±0.001mg/L for Fe,0.014±0.002-2.088±0.002mg/L for Cu, 0.006±0.001-0.033±0.001mg/L for Pb and 0.17±0.001-3.34±0.001mg/L for Zn. Most of these concentrations values were within WHO limits with exception in few samples i.e Sample A for Zn, Sample C for Fe and Samples D and E for Pb. The results for geochemical distribution of the metals in the soil revealed by sequential extractions show that 90% of the metals concentrations were found in the residual fraction. Also, the results for geo-accumulation index (Igeo) ranges from unpolluted to low pollution.

Keywords:, Atomic Absorption Spectroscopy, Farmland,Geo-accumulation Index and Heavy metals