

Pollution and Global Warming

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Assessment of pollution load of heavy metals in cassava mill effluents contaminated soil: A case of small-scale cassava processing mills in a rural community in the Niger Delta region of Nigeria**Sylvester Chibueze Izah, Sunday Etim Bassey and Elijah Ige Ohimain**
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Cassava mill effluents are discharged into the environment by smallholder cassava processors in rural communities in the Niger Delta region of Nigeria. Cassava mill effluents are known to be toxic to biodiversity including some livestock, vegetation, microorganisms and fishes. Cassava mill effluents also alter the soil and water physico-chemical characteristics. This study evaluated the pollution load of heavy metals in cassava mill effluents contaminated soil in rural community in the Niger Delta region of Nigeria. Soil auger was used to collect triplicate soil samples at three different months from five locations between November 2016 and March 2017. The soil samples were dried, digested and the heavy metals concentration were determined using flame atomic absorption spectrometry. Fifty percent of mean detected individual metals were considered for the location that the metals were not detected for each location. Geometric (BGM) and median mean (BMM) were considered for the background scenarios. The pollution load was calculated following standard protocol. Five pollution indices were considered including contamination factor (CF), degree of contamination (CD), pollution load index (PLI), pollution index (PI) and nemerow integrated pollution index (NIPI). Heavy metal analysis revealed the presence of Fe, Cr, Zn, Cu, Co, Ni, Mn and Pb and absence of Cd in the soil samples. The results revealed that CF and CD had low to moderate contamination level, PLI were within no pollution to moderate pollution, PI were also within no pollution to low pollution level and NIPI were within warning line of pollution to low level of pollution. The findings of this study showed that cassava processing by smallholder in rural communities in the Niger Delta is contributing to heavy metals level at low to moderate level depending on several factors such as age and heavy metal content in the cassava tuber

Biography

Sylvester Chibueze Izah is a PhD student supervised by Dr Sunday Etim Bassey and Prof Elijah Ige Ohimain at Niger Delta University, Wilberforce Island, Nigeria. He holds a Master of Science degree in Applied Microbiology (Distinction) from Niger Delta University. Between 2012 till date, he has an impressive research and publication record in the field of Applied Biology including Bioenergy, Toxicology, and Applied Microbiology, Risk Assessment, Environmental Microbiology and Pollution studies (i.e. water, air and soil). He has over a 100 publications in both international and national journals. Before now, his research interests are focused on Bioenergy and Environmental Biotechnology but currently his research is tending towards environmental/health risk assessment, toxicology, food microbiology and the conversion of food processing waste water into useful products while minimizing the attendant environmental effects

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