

# HEAVY METAL COMPOSITION OF SOILS IN SOME NIGERIAN COMMUNITIES

Session No. 214

T77. Undergraduate Research Projects As a Way to Solve Water- Related Problems/Issues (Posters)



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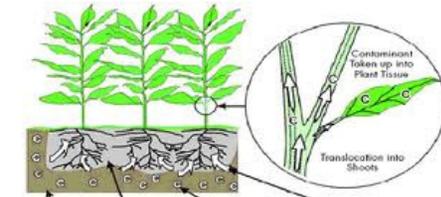
**ABSTRACT:** The occurrence of heavy metals in some soils is becoming problematic as these affect the environment and public health. Previous studies have shown cadmium levels to be high in South-West Nigeria. Also, water samples taken from the area have high heavy metal content. The local geology may help explain the reason for the high levels of the heavy metals in the soils. The soil is from the Benin formation that is Miocene to recent in age and it exhibits some deltaic depositional environment. A pilot study was conducted in Ogun State, Nigeria, where several industries are concentrated, to verify the possible sources of the heavy metals. Four soil samples were obtained from different locations using hand held auger at a depth of 2m below the surface. The samples were sieved and dried in an oven prior to chemical analysis. Atomic Absorption Spectrophotometer was used in determining metal concentrations. We tested for cadmium (Cd), zinc (Zn), chromium (Cr) and Nickel (Ni) that are associated with manufacturing. Results show that Cd concentration in the soil samples from Ado-Odo/Ota communities were 0.865, 2.825 and 4.010mg/kg respectively while the sample from Ifo was 1.320mg/kg. Zinc had values of 10.510, 4.650 and 3.570mg/kg respectively while the value from Ifo was 2.300mg/kg. Chromium in Ado-Odo/Ota was 43.350, 38.600 and 16.625 mg/kg while the sample from Ifo was 11.285mg/kg. Nickel was found to be below 0.001mg/kg in all four samples. All the metals tested were safely below the Dutch Standard target values of 140, 100 and 35mg/kg for Zn, Cr and Ni. Cadmium, however, exceeded the target value of 0.8mg/kg but below the intervention value of 12.0mg/kg in all soil samples. This means that although the Cd levels are relatively high in all four communities, there is no immediate need for soil remediation. Also, the study shows that heavy metal in Ota had values that were generally higher than that in Ifo. The fact that only Cd exceeded target values in both Ado-Odo/Ota and Ifo municipal communities suggest that geological factors, and not industrial discharges, may be culpable for the problem. Further studies to determine the fate and transport processes of Cd as well as the routes through which it gets into groundwater is recommended. This will help predict the progression of the contaminant in order to prevent its escalation.

**BACKGROUND:** Soil pollution can be induced by natural deposits in surrounding soils or by human activity. In Ota, (a highly industrialized Nigerian city), there are concerns as to the possible sources of heavy metal contaminants being found in surrounding soil and groundwater.

**EDUCATION:** Young scientists (under graduates) were tasked with the investigation of the origin of the heavy metals found around Ota.

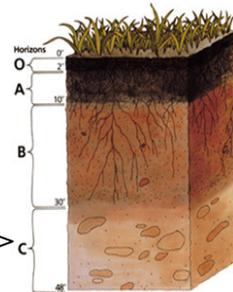
**IMPACT OF THE POLLUTION ON PUBLIC HEALTH:** Heavy metals are leaching into drinking water sources such as surface water bodies and dug wells

**IMPACT:** the heavy metals are also being taken up by edible plants



**RESULTS:** It was found that the surrounding soil was to blame, not the industries.

**CONCLUSION:** The younger generation has a lot of ideas that can be tapped in identifying and solving society's problems.



Which is to blame?