ASSESSMENT OF HEAVY METALS ON SURFACE WATER IN SHIRORO LANDFILL SITE

Kuti, I. Abayomi[1], Abdullahi, Suleiman[2], Musa, J. J[1]., Galadima, M. K[2]. Animashaun, I. Murtala[1], Aroboinosen, Hillary[3]

[1]Department of Agricultural & Bioresources Engineering, Federal University of Technology, Minna. Nigeria.

[2]Centre for Disaster Risk Management & Development Studies, Federal University of Technology, Minna. Nigeria

[3]Department of Agricultural & Bioresources Engineering, Federal University of Agriculture, Abeokuta, Ogun State, Nigeria.

abykuti6@futminna.edu.ng

Abstract

Due to different wastes infused in landfill work, the presence of heavy metals on surface water requires urgent attention. In view of this, the study assessed heavy metal on surface water in Shiroro landfill site for ascertaining the status of the surface water. The study chose different sampling points and a control within the landfill site. The surface water samples were taken and analysed in line with the methods and procedures of WHO and Nigeria Standard for Drinking Water Quality. The results show that the physic-chemical properties of the surface water on the landfill changed drastically when compared to the values of the control sample. The study found out that the mean Iron concentration value was 0.3 mg/l (equal to WHO and Nigeria Standard for Drinking Water Quality maximum limit concentration), lead concentration (0.02 mg/l- more than Nigeria Standard for Drinking Water Quality but less than WHO maximum limit concentration), Nickel concentration (0.03mg/l- more than Nigeria Standard for Drinking Water Quality) and Manganese concentration was 1.05 mg/l (more than Nigeria Standard for Drinking Water Quality and WHO maximum limit concentration). Furthermore, the environment was vulnerable to the risk of cancer, possible carcinogenic and Neurological disorder because the distance of the landfill site was less than 200 m to Shororo River. Based on the WHO standard and Nigeria Standard for Drinking Water Quality maximum limit concentrations, it can be inferred that presence of these parameters were low on the landfill site. This implies that the surface water within and outside the landfill sites was unfit for drinking and farming purposes. It is recommended that an embankment should be constructed within the landfill to restrict the movement of heavy metals. Also, the landfill site should not be used for farming purpose so as reduce its impact on the people of the area.

Keywords: Landfill, Heavy metals, Surface Water

1.0 Introduction