

HYDROCHEMISTRY OF LEACHATE FROM MUNICIPAL SOLID WASTE LANDFILLS IN ACCRA.

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2005

ABSTRACT

Leachates from Municipal Solid Waste Landfills have been implicated in environmental pollution, surface and groundwater contamination on regional and local levels. Attempts by metropolitan and regulatory authorities to solve problems of Municipal Solid Waste Management in Ghana, especially in large cities such as Accra, have failed partly due to inadequate data on waste stream characteristics and waste degradation products. The study was designed to provide reliable information on hydrochemistry of leachate from landfills at Oblogo and Mallam communities in the Ga District of Accra. Data on waste stream characteristics indicate values of 70% organic substances, 13% inert material, 9% hard plastics, 4% metal scraps, 3% paper and 1% textile. Results of physico-chemical analysis indicate all parameters with the exception of turbidity had greater values than EPA (Ghana) guidelines for effluent discharge into natural waters. Physical parameters like Temperature and Conductivity showed temporary decreasing trends over the six month study period. Chemical parameters exhibited increasing pattern with time over the sampling period and decreasing trends spatially from the dumpsite up to 250m away. Metallic elements such as Fe, Zn and Cd also indicate decreasing trends over the sampling period as well as distances away from the dumpsite. The nutrients measured exhibited an overall decreasing pattern with time over the study period and distances away from the dumpsite. There was no significant pattern of variation exhibited by BOD. However, decreasing and increasing trends were noted for COD, BOD/COD ratio and DO, respectively, with time as well as distances from the dumpsite up to 250m. The social survey results revealed that scavengers and recyclers recovered most hard plastics and metal scraps. Observations from the study suggest that low cost treatment methods such as neutralisation, gravel filtration, waste stabilisation ponds, and phytoremediation would be appropriate for the management of such leachate.

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