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LEVELS OF DI-ETHYLHEXYL PHTHALATE (DEHP) IN DOMESTIC DRINKING WATER DISTRIBUTION SYSTEM IN WARRI, NIGERIA

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ABSTRACT

Diethylhexylphthalate (DEHP) as phthalate plasticizers is commonly used to improve the quality of plastic products. It is physically bound to plastic products and as a result, can be released into the surrounding environment. A common material in our domestic water distribution system is polyvinyl chloride (PVC). Elevated levels of DEHP have been implicated in cancer cases. Levels of DEHP in water obtained from a domestic water distribution system have been experimentally determined. Within the study area, five boreholes which serve to provide water for drinking and domestic purposes were selected for the study. The choice of the five boreholes was guarded by the age of the household water distribution system. Gas chromatography (GC) coupled with a mass spectrometer (MS) was used to evaluate the levels of diethylhexyl phthalate (DEHP), in the water samples. The levels of DEHP in the water samples ranged from 1.77 to 4.71µg/l with the arithmetic mean value of 3.072µg/l which is below 6.0 µg/l limit for safe drinking water. Correlation analysis using Pearson's Product Moment showed a positive correlation between the levels the DEHP in water samples with the age of the domestic water distribution system. Ecological and health effects of this substance on humans through the consumption of this drinking water, even at this minute level needs further investigation because of the possibility of biomagnifications.

KEYWORDS: *Diethylhexylphthalate, Polyvinyl Chloride, Domestic Water Distribution System, Phthalates, Acid Esters, Plasticizers, Drinking Water*