

Assessment of Groundwater Quality around a Cement Factory in Ewekoro, Ogun State, Southwest Nigeria

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Abstract : This study focuses on the growing concerns about the quality of groundwater found around cement factories, which have caused several health issues for residents located within two (2) kilometer radius. The qualities of groundwater were determined by an investigative study that involved the determination of some heavy metals and physicochemical properties in drinking water samples. Eight (8) samples of groundwater were collected from the eight sampling sites. The samples were analysed for the following parameters; iron, copper, manganese, zinc, lead, color, dissolved solids, electrical conductivity, pH, dissolved oxygen (DO), biological oxygen demand (BOD), chemical oxygen demand (COD), temperature, turbidity and total hardness using standard methods. The test results showed the variation of the investigated parameters in the samples as follows: temperature 26-31oC, pH 5.9-7.2, electrical conductivity (EC) 0.37 - 0.78 μ S/cm, total hardness 181.8 - 333.0 mg/l, turbidity 0.00-0.05 FTU, colour 5-10 TCU, dissolved oxygen 4.31-5.01 mg/l, BOD 0.2-1.0 mg/l, COD 2.0 -4.0 mg/l, Cu 0.04 - 0.09 mg/l, Fe 0.006-0.122 mg/l, Zn 0.016-0.306 mg/l, Mn 0.01-0.05 mg/l and Pb < 0.001 mg/l. The World Health Organization's standard for drinking water quality guidelines was exceeded in several of the analyzed parameters' amounts in the drinking water samples from the study area. The dissolved oxygen was found to exceed 5.0 mg/l, which is the WHO permissible limit; also, Limestone was found to exceed the WHO maximum limit of 170 mg/l. All the above results confirmed the high pollution of the groundwater sources, and hence, they are not suitable for consumption without any prior treatment.

Keywords : groundwater, quality, heavy metals, parameters

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