Prevalence of heavy metals and computation of its associated risk in surface water consumed in Ado-Odo Ota, South-West Nigeria

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ABSTRACT

Heavy metal contamination levels, their potential sources and associated health risk of River Balogun – a major source of water for daily domestic activities–were investigated using statistical techniques and some health risk indices. To achieve this, 51 samples from 17 stations (STs) along the river were collected in December 2016 and analyzed for the presence of Lead (Pb), Zinc (Zn), Nickel (Ni), Arsenic (As), and Copper (Cu). The results of the study revealed the presence of As, Ni, and Pb concentration levels exceeding or equal to World Health Organization standards. In addition, the application of both methods used revealed that low pH values measured from the river could emanate from leachate of agrochemicals and carbonic acid from decayed plants while high Nickel and Arsenic concentrations were from the overapplication of fertilizers used in farms surrounding the river and found their way into the river after precipitation. Health risk assessment showed that all the water sampled at different STs would pose a serious threat to the health of children and adults overtime especially due to elevated arsenic concentration measured in all STs.

KEYWORDS: heavy metals, dispersion, average daily dose (add), pollution, risk assessment