



## ASSESSMENT OF HEAVY METAL STATUS IN DOMESTIC WATER SOURCES IN JALINGO, TARABA STATE, NIGERIA

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### Abstract

*The study investigates the quality of domestic water sources in Jalingo Metropolis. To this end, 22 water samples were collected from bore holes (14), hand dug wells (6) and surface water (2) and analyzed for physiochemical parameters and some heavy metals. The physiochemical parameters were measured using standard methods while the heavy metals were analyzed using Air-acetylene Flame Atomic Absorption Spectrometer (220 FS BUCK Scientific model). Results showed that the concentration of these heavy metals were within the World Health Organization (WHO) maximum permissible limit. The result indicated that the water sources are recommended for domestic purposes, however, if indiscriminate sinking of bore holes and dumping of refuse and other anthropogenic emissions are not checked there is likelihood of increased concentration of these metals in the future [FJPAS 1(1) 2016].*

### 1.0 Introduction

Water is a common chemical that is essential for the survival of all known forms of life. It is used in vast quantities for drinking purposes and even in greater quantities for washing, bleaching, dyeing, cooling, raising steam to drive engines and turbines to generate electricity and in other industrial processes too numerous to mention. Due to industrialization and urbanization, there is high urban migration causing population overshoot in these cities. This results in high demand for water amongst other necessities of life. Although surface water such as lakes, rivers, streams and springs are easily accessible, in most cases, they are not usually available all-year-round as they dry –up during the dry season. There is great need for people to drill boreholes and dig wells for ground water which are thought to be of better quality [1]. The quality of water are indirectly and adversely affected by some human activities such as accidental or unauthorized release of chemical substances, discharge of untreated effluents, leaching of noxious liquids from solid wastes deposits, surface run-off, untreated sewage acidic rain etc. The above mentioned human activities all contribute to the heavy metals input in water bodies. In natural aquatic ecosystem, heavy metals occur in low concentrations mainly due to weathering of soils and bedrocks [2]. The natural aquatic ecosystems are mostly found in rural areas. In

urban areas, however, there has been an unprecedented increase in the level of these metals due to anthropogenic activities. The occurrence of such metals in excess of natural concentrations is toxic and has become an increasing problem to both environmentalist and health practitioners. Unlike most organic pollutants, heavy metals are persistent in the environment as they are not easily degraded through either biological or chemical means. The accumulation of various metal pollutants into the aquatic environment could damage the quality of the ecosystem, rendering it unsuitable for its intended uses and posing serious health threat to the immediate population. In view of the health threat/hazard associated with increased heavy metal concentration, many studies have been undertaken to assess the level of heavy metal in aquatic and terrestrial habitat [2-6]. There is little or no information on the status of heavy metals in available domestic water sources in Jalingo, hence this study. The study is further necessitated by the fact that as a fast growing capital city in Nigeria, there is high demand for potable water in every household. The absence of access to potable water has led to the proliferation of boreholes and hand dug wells in the city without considering the presence or absence of dumpsites, pit toilets etc. close to the boreholes. In this work we hope to close the information gap and therefore provide data on the status or quality of