

Physio-Chemical and Microbial Water Quality Assessment of Selected Wells in Bida Catchment Area of Niger State, Nigeria

J. A. Oche¹, N. A. Egharevba², Y. M. Otache³ and Mohammed I.S⁴
Department of Agricultural and Bioresources Engineering,
Federal University of Technology Minna, Nigeria
aladejo2@gmail.com Phone number: 07065902893

Abstract: This study evaluated the quality of groundwater in Bida catchment area of Niger state, Nigeria. The study was necessitated by the need to appraise the effects of the seeming unregulated manner in which solid wastes and waste water from domestic and agricultural sources are dumped or deposited in the area. The study was carried out by collecting three water samples from three water wells in the study area at both wet and dry seasons. Based on this, laboratory tests were conducted. The results of the assessment of Physico-chemical, and Microbial parameters clearly showed that most of the parameters tested fell within the recommended WHO standard limits while for wet and dry seasons, respectively, Coliform value was found to be above standard limits for wet season whereas for dry season period, Coliform and E-coli were above the recommended limits. Based on the results, it is imperative that groundwater exploration in Bida catchment area should be deep and waste management practices should be encouraged among the people through enlightenment campaign. In addition, water treatment plants should be established in the study area to help curb unwarranted spread of water borne diseases in the study area.

Keywords: Ground water, microbial, physio-chemical, water quality, Bida Catchment

1: Introduction

As reported in (Guru *et al.*, (2011), Quality of groundwater can be assessed based on the physical (Colour, taste, odour, temperature and turbidity), Chemical (Alkalinity, Calcium Hardness, Magnesium Hardness, Calcium ion, potassium and trace elements) and Microbial parameters (i.e., Total Coliform and E-Coli). It is obvious that open dumping/depositing of solid waste and waste water are the major factors that affect water quality alteration in developing countries like Nigeria (Mohammed, 2011). Solid wastes are residues from homes, business and institutions and are referred to as trash, garbage, rubbish, refuse, and discards (Omotomwan and Esegbe, 2009).

Liquid wastes are wastes dissolved in water which are usually from industrial processes known as effluent, domestic liquid, acid waste and waste oil

from workshops (NISP, 2003). Contamination of water bodies are issues of serious environmental concern (Akpoveta *et al.*, 2010). This is due to the fact that urban population is increasing every day as a result of rural – urban migration necessitated by various factors. The absence of or rather inadequacy of other source of water supply like pipe born water today in various part of Nigeria has made groundwater an important source of water supply for the populace (Adelekan, 2010). Open dumping or depositing of solid waste and waste water in Bida catchment area of Niger state is becoming a serious problem that needs to be addressed since it can cause adverse effect on the quality of ground water in the area.

This work evaluated the quality of ground water (Hand dug well and drilled bore holes) in Bida catchment area of Niger state. This was done to

