



# Heavy Metal Pollution and Ecological Risk Assessment in the Surface Water

Ali Alsalmeh\*

Department of Civil Engineering, Mohamed Sathak Engineering College, Kilakarai, India

\*Corresponding author: Ali Alsalmeh, Department of Civil Engineering, Mohamed Sathak Engineering College, Kilakarai, India E-Mail: alialsalmeh@gmail.com

Received: 01 January, 2022, Manuscript No. jhhe-22-56953;

Editor assigned: 03 January, 2022, PreQC No. jhhe-22-56953 (PQ);

Reviewed: 17 January, 2022, QC No jhhe-22-56953;

Revised: 22 January, 2022, Manuscript No. jhhe-22-56953 (R);

Published: 29 January, 2022, DOI: 10.4172/2325-9647.1000211

## Introduction

A massive portion of the district (approximately 75%) is underlain via crystalline Precambrian rocks of the Birimian super group, which is intruded by using granitites of the Eburnean and Tarnian Plutonic Suites. The Birimian generally includes gneiss, phyllite, schist, migmatite, granite-gneiss, and quartzite, whereas the associated intrusions are composed mainly of okay-feldspar-wealthy-granitoids consisting of granite and Menonite (Bongo type). The lower and Jap quantities of the district are underlain by using the Voltaian super group (Kwahu-Bombouka institution), which consists specially of great-grained micaceous sandstones, medium-grained mudstones, and sales, and the Tarkwaian. They overlie the Birimian and Tarkwaian within the district and are thought to be of late Precambrian to Paleozoic age [1]. The Violation super group is subdivided into three main stratigraphic gadgets based on lithology and discipline relationships: Basal sandstones, Otis/Pindaric, and Bosom super groups. The Basal sandstones contain quartz sandstone formation of approximately seventy five m thick and commonly arise along the northern and western edges of the Violation super group. The Otis/Pindaric, however, is a lot thicker and incorporates argillaceous sandstones, arose, siltstones, interbedded mudstone, sandy shale, and conglomerates. The Obosum formation of the Voltaian supergroup includes dirty-yellow, excellent-grained, thinly bedded, and micaceous feldspathic quartz sandstones with subordinate argillite intercalations and whitish-yellow, massive, great- to medium-grained, go-bedded arkosic, and quartzose sandstones.

The district falls inside three principal hydrogeological provinces: the Voltaian, Crystalline Basement Granitoid complex and Birimian Provinces. Generally, the Birimian rocks showcase deeper weathering than the granitoids. Groundwater occurs specifically in the scapolite, sap rock, and fractured bedrock in the Birimian Province [2,3]. However, the decrease and top elements of the saprolite and saprock, respectively, are the most productive zones in terms of groundwater delivery and typically complement every other in phrases of permeability and groundwater storage.

## Ground water

Primary kinds of basement aquifers have been diagnosed: the weathered rock (fracture-associated), quartz-vein, and the untethered fractured aquifers. Banoeng-Yakubo et al. similarly emphasize that the

saprolitic zone outcomes from an aggregate of the topsoil, underlying lateritic soil, and the variably weathered region within the Birimian Province. Borehole depths set up Birimian and the Tarkwaian variety among 35 and 55 m with an average of 42 m. carrier et al. additionally recorded borehole intensity in a similar variety of 35 and 55 m with a mean of fifty m in the granitites. Akurugu et al. indicate that the depth to the water table, at the time sampling information had been collected for this examine, tiers between two and thirteen m with a mean of 8 m. the highest elevations are within the eastern and southeastern sections of the district; as such, groundwater glide follows a widespread northeast-southwest sample with a few neighborhood glide structures, which cannot be without a doubt described [4,5]. The aquifer hydraulic conductivity has been said to be quite variable, ranging among zero. The productive zones of the Birimian Province have additionally been stated to variety among zero.

The Kwahu-Morago of the Voltaian super group is a superb aquifer quarter composed specially of the sandstone formation. The Voltaian super group is characterized via little or no primary porosity; as a result, groundwater prevalence in the region is managed by using secondary porosities from the weathering and fracturing of the rock which has superior the garage and trans missive houses of the rocks to shape groundwater reservoirs [6].

The plants of the district is a typical guinea Savannah wooded area, comprising especially of brief broadly spread plants and shrubs (discern four), which typically shed foliage at the cease of the growing season, and timber and floor flowers of grass, which get burnt with the aid of fireplace or the sizzling sun in the course of the lengthy dry season. Normal trees are dawadawa, shea timber, acacias, and baobab. These situations impact negatively on rainfall quantity in the region, thereby affecting the amount of groundwater. As a predominantly agricultural economic system, the immoderate temperatures and lengthy dry season intervals compel indigents to are trying to find alternative livelihoods somewhere else, normally southern Ghana, in order to cater for the meals hole during the ones periods, which have a propensity of drawing the young and energetic farm labor from the groups.

Research of nature at which land is positioned to apply with the aid of of numerous anthropogenic sports is a key to understanding the fine of groundwater in a given place. On this present have a look at, Land cowl satellite data for the year 2015 changed into downloaded from the weather exchange initiative Land Cowl (LC) venture which promises international LC maps at a spatial resolution of 300 m. The information changed into in addition processed in ArcGIS 10.2 from which diverse Land Use/Land Cowl (LULC) classes of hobby which have a full-size impact on the overall satisfactory of groundwater inside the location have been diagnosed and delineated. determine 5 affords a confirmatory picture of LULC of the take a look at region as corroborated by the statement that the entire location is largely rural, comprising rain-fed croplands, mosaic timber and shrubs, patches of naked land, and so forth [7]. The LULC system in the district and Ghana as an entire is typically intercalated, with no properly-described sample. A few city-like regions consist of Tongu, Pwalugu, and Winkogo positioned inside the imperative, northwestern, and southwestern elements of the district.

Soil serves because the herbal medium thru which plants grow on land. As such, it's miles arguably one of the maximum critical natural assets of a country. Unique forms of soils with various suitability for

extraordinary functions exist. The bedrock, climate, drainage, weather, microorganism, and several different factors decide the form of soil that exists in a specific locality [8]. The district is ruled via liaisons, leptosols, and luvisols, mainly due to these reasons. Being shows that soils of the Savannah belts are often low in organic matter and soil moisture in the surface horizon especially because of the dominant grass plants and low and variable rainfall styles [9,10]. As a result, the soils are typically susceptible to erosion and declining fertility, whilst subjected to even the least bad land use practice.

## References

1. Eneke GT (2011) Controls on groundwater chemistry in a highly urbanised coastal area. *Int J Environ Res* 5: 475-490.
2. Selvakumar S, Chandrasekar N, Kumar G (2017) Hydrogeochemical characteristics and groundwater contamination in the rapid urban development areas of Coimbatore, India. *Water Resour Ind* 17: 26-33.
3. Klove B (2014) Climate change impacts on groundwater and dependent ecosystems. *J Hydrol* 518: 250-266.
4. Balkhair KS, Ashraf MA (2016) Field accumulation risks of heavy metals in soil and vegetable crop irrigated with sewage water in western region of Saudi Arabia. *Saudi J Biol Sci* 23: 32-44.
5. Gyau-Boakye P, Tumbulto JW (2006) Comparison of rain- fall and runoff in the humid south-western and the semiarid northern savannah zone in Ghana. *AJST* 7: 64-72.
6. 10. Anku YS, Banoeng-Yakubo B, Asiedu DK, Yidana SM (2009) Water quality analysis of groundwater in crystalline basement rocks, northern Ghana. *Environ Geol* 58: 989-997.
7. Dapaah-Siakwan S, Gyau-Boakye P (2000) Hydrogeologic framework and borehole yields in Ghana. *Hydrogeol J* 8: 405-416.
8. Yidana SM, Ophori D, Banoeng-Yakubo B, Samed AA (2012) A factor model to explain the hydrochemistry and causes of fluoride enrichment in groundwater from the middle voltaian sedimentary aquifers in the Northern Region, Ghana. *J Eng Appl Sci* 7: 50-68.
9. Krishna NDR, Maji AK, Krishna YVN, Rao BPS (2001) Remote sensing and geographical information system for canopy cover mapping. *J Indian Soc Remote Sens* 29: 108-113.
10. Singh P, Khan IA (2011) Ground water quality assessment of Dhankawadi ward of Pune by using GIS. *Int j geomat geosci* 2: 16.