

The Assessment of Groundwater Quality in Relation to Location of Pit Latrine in the Ketu South District of the Volta Region

Ahiabor, Seth Yao

2010

ABSTRACT

Inadequate access to portable water is a major problem confronting most societies and countries worldwide. The availability of adequate and safe water and the provision of sanitation facilities are widely recognised to help improve upon healthcare and minimize significantly the outbreak of waterborne diseases such as bilharzia and guinea worm. In the study area, the Ketu District of Ghana, groundwater (hand-dug-wells and boreholes) is the main source of water supply for domestic use. In view of the dangers associated with contaminated water for consumption, the study sought to *“determine and quantify possible levels of groundwater contamination due to seepage from pit latrines and promote efficient and sustainable utilisation and management of groundwater resources, thereby improving Public Health”* as its main objective. Using the Standard Methods for the Examination of Water and Wastewater and the Examination of Water for Pollution Control (WHO) and Guidelines for drinking water quality, samples from selected wells were taken and analysed to determine their physical, chemical and bacteriological qualities. Using a GPS, the geographical coordinates of the wells sampled and closest pit latrines (toilet facilities) to them were also taken to find the distance between them and the possible impact the proximity of the pit would have on the hand-dug wells. The views of respondents on relevant issues of water and sanitation in the district were also sought through the administration of a questionnaire. The results of the study showed that the values of parameters of the water samples such as temperature, electrical conductivity, phosphate and nitrate were higher than WHO standards. This indicates a major threat being posed to groundwater quality in the study area. Also, there were high counts of microbial loads and relatively high nitrates in hand-dug well samples in the study. The presence of pathogenic organisms in the water samples suggests that the pit latrine influenced the quality of water in the wells, since they were sited close to the wells. From the social survey, about 80% of the respondents admitted that groundwater risks pollution. About 44% of them had toilets at home or in their neighbourhood. Besides, all the wells sampled had pit latrines within a distance of 12 to 18m close to them. Based on the findings, recommendations are made. These include; more public

education on sanitation, waterborne diseases and groundwater conservation; provision of adequate public KVIPs to avoid indiscriminate use of beaches, refuse dumps and bushes as places of convenience which pose risk to groundwater contamination; and provision of adequate communal waste containers in communities and their timely disposal to avoid groundwater contamination by leachate from open refuse dumps. Hand-dug wells should be sited away from pit latrine, septic tank and rubbish dumps. They should be sited at higher elevation so as to serve as a sink during rainfall.

SUPERVISORS

Dr. Nyame, F. K

Professor Asiedu, A.B.