

# **Health Status Implication of Household Water Sources In Rural Communities of Jasikan District**

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## **ABSTRACT**

Physico-chemical and bacteriological analyses were carried out on water samples from boreholes, a well and rivers in 10 communities of the Jasikan District over a period of five months (December 2010 to April 2011) to ascertain the health impacts of using water from a particular source. Temperature, Turbidity, Conductivity, Total Dissolved Solids (TDS) and pH were measured on-site. Physico-chemical parameters measured at the laboratory were alkalinity, bicarbonates, Total Suspended Solids (TSS), Total Colour, Fluoride (F), Chloride (Cl), Nitrate-Nitrogen (NO<sub>3</sub>-N), Nitrite-Nitrogen (NO<sub>2</sub>-N), Ammonia-Nitrogen (NH<sub>3</sub>-N), Phosphates (PO<sub>4</sub>), Sulphates (SO<sub>4</sub>), Copper (Cu), Manganese (Mn), Iron (Fe), Calcium (Ca), Dissolved Oxygen (DO) and Biochemical Oxygen Demand (BOD). Faecal coliform (FC) and Total coliform (TC) were the bacteriological parameters measured. Microsoft Excel was used to compute means and standard deviations. SPSS 16.0 for Windows was used for the determination of the level of correlation between parameters. Graphical presentation of the data was undertaken using Microsoft Excel and SPSS version 16 to highlight trends in data obtained. To assess the quality of the major sources of water in the communities, each parameter was compared with the standard permissible limit of that parameter in drinking water as prescribed by WHO and Ghana Standards. The influence of factors such as cost of water, accessibility to water, perceived quality or taste of water, ignorance of disease, sanitation and perceived in quality of water on the choice of water source were investigated through a social survey. Generally, the rivers and well waters were found to be polluted with some of the physico-chemical and bacteriological parameters exceeding WHO acceptable limits and Ghana Standards. Fluoride concentration in both boreholes and rivers was, however, below the acceptable limit set by WHO and Ghana Standards. Some borehole water samples also showed some level of contamination. The following parameters were appreciably high in water samples from rivers and the well; temperature (21.5<sup>o</sup>C-29.9 <sup>o</sup>C), turbidity (5.57-395.00 NTU), colour (10-282 Pt Co), Fe (0.01-3.2 mg/l), Cu (0.00-0.15 mg/l), Phosphates (0.09-2.0 mg/l), Faecal coliform (0-1220 counts/100ml) and Total coliform (0-

2300 counts/100ml). Borehole water samples also recorded high values for the following parameters: temperature (24.9°C - 35.6°C), conductivity (254µS/cm- 886µS/cm), phosphate (0.21-3.04mg/l), faecal coliform (0-40 counts/100ml) and total coliform (0-104counts/100 ml). The study identified three major sources of water for the inhabitants of the communities in the study area. The social survey indicated that ignorance of water related diseases and sanitation practices were high. Activities such as washing and bathing in rivers were common in all the 10 communities in the study area. Choice of boreholes as source of water was based on the following factors: safety (68%), accessibility (21%), perceived quality (10%), use (1%) and cost (0%), whereas, choice of rivers was based on accessibility (85%), cost (6%), perceived quality (3%) and safety (3%). People chose well water based on accessibility (81%), cost (13%), safety (6%), perceived quality (0%) and use (0%).

## **SUPERVISORS**

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