



Characterizing boreholes and wells water quality in Ferkessédougou, Côte d'Ivoire

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ABSTRACT

Objectives: A good knowledge of water quality can guide policy makers for improved access to drinking water in a context of galloping demography and rapid urbanization. The aim of this study was to characterize the physico-chemical parameters of drinking water from boreholes and wells in Ferkessédougou, Côte d'Ivoire.

Methodology and Results: Wells and boreholes were chosen based on their location and relative importance. Water was collected during the rainy season from 7 wells and 3 boreholes and analysed. Physical parameters (pH, conductivity, turbidity, STD) were measured in situ using multi-parameter probes. Chemical parameters (NO_3^- , NO_2^- , NH_4^+ , PO_4^{3-} , Fe^{2+} , Absorbance at 410 nm, Na^+ , Ca^{2+} , Mg^{2+} , K^+ , SO_3^{2-}) were analysed using a molecular absorption spectrophotometer. Overall, the results indicated that boreholes and wells water were acidic (average pH < 7) and slightly mineralized (EC < 500 $\mu\text{S}/\text{cm}$). Moreover, water from wells and boreholes were not statistically different based on their quality.

Conclusions and application of finding: Concentration values for cations (NH_4^+ , Fe^{2+} , Mg^{2+} , Ca^{2+} , Na^+ and K^+) and anions (NO_3^- , NO_2^- and PO_4^{3-}) in wells and boreholes water in this study area complied with the WHO guidelines. It is deduced that the quality of groundwater in Ferkessédougou is acceptable based on its physico-chemical characteristics, although nitrates concentrations in the two drinking water sources remain at critical levels for the population health. Such results can serve as a basis for improved control of boreholes and wells water quality in Ferkessédougou. They can also help define better policies and strategies of access to drinking water in urban areas in Côte d'Ivoire.

Keywords: Water quality; Drinking water; Groundwater; Water resources.