

Overview of the bacteriological quality of ground water sources used by local communities from Bukavu town (eastern DR Congo) as sources of drinking water

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The objective of this work was to evaluate the degree of bacterial pollution of ground water sources as sources of safe drinking water consumed by local human communities living in urban and peri-urban zones of Bukavu town (eastern DR Congo). Populations living in these zones are generally disfavored in terms of safe water supply services by the national water corporation (REGIDESO). This study was conducted in 2011 during the dry and rainy seasons from 15 ground water sources used by the population from these peri-urban zones as sources of safe drinking water and as source of safe water for other domestic needs. In total, 150 samples were taken from these water sources. During both rainy and dry seasons, 5 water samples were taken for every source. These samples were analyzed for their physic-chemical and bacteriological properties in comparison to world health organization standards. Results indicated that the degree of bacterial pollution of water was high ($T=4.56$, $P<0.05$) during rainy season (20.6 ± 25.3 total coliforms /100 ml of water on average) than during the dry season (3.10 ± 6.023 total coliforms/100 ml of water on average) across all sources studied. Sources (sites) that were highly polluted included Mulehe I, Kaliba, Kahuranyi, Cemu, Bagira, Funu et Gihamba. Overall, bacterial pollution of drinking water sources was significantly ($P<0.05$) high during the rainy season than during the dry season. Similarly, cholera epidemic outbreak is high in these zones during the rainy season (September-December). In November-December 2011, more than 400 cases of death were registered in hospital and the victims were from these highly polluted areas where the study was conducted. In fact, the presence of *Vibrio cholerae* was detected in all rainy season water samples from these areas. The results of this study indicated that *Vibrio cholerae* is the principal dangerous pollutant agent of these drinking ground water sources used by more than half million people living in peri-urban areas and in over-populated areas in Bukavu town. There is a need for policy makers to develop new strategies to supply everyone safe drinking groundwater in Bukavu Town. The adoption of rainwater harvesting technologies may help in areas where the national water corporation can't be able to supply water in short to mid terms.

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