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## Problematic of Drinking Water Access in Rural Area: Case Study of the Sourou Valley in Burkina Faso

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### ABSTRACT

Safe drinking water access for rural populations in developing countries remains a challenge for a sustainable development. The study aims to investigate the drinking water quality and the factors affecting this quality in the Sourou valley in Burkina Faso. A total of 135 water samples were collected in sterile glass bottles during the dry seasons 2007, 2008, and 2012 from 10 drillings and 5 wells. Fifteen physicochemical parameters and two fecal pollution indicators (*Escherichia coli* and fecal Coliforms) were monitored based on laboratory standard methods. Datas were analyzed, using the Student t' test and XLSTAT 7.5.2 statistical software. From results obtained, water quality was related to water source and sampling period as well ( $p < 0.0001$ ). 30% of drillings provided water with nitrates concentration over the World Health Organization (WHO) guideline value. High turbidity was also observed for some drillings. Moreover, 90% of drillings showed water total hardness largely over the WHO threshold value. Water from drillings were exempt of fecal pollution, contrasting with the wells one which appeared uniformly polluted with concentrations exceeding sometimes  $10^3$  and  $10^4$  CFU/100 ml for *E. coli* and fecal Coliforms, respectively. Field investigations showed a preference of wells as drinking water source, and that appeared related to the lack of self-management of drillings and to cultural considerations. Overall, this study highlighted that a regular survey of water quality, management of protection zones around drinking water sources, sensitization on water resources self-management, hygiene and health issues, and providing appropriate household disinfection methods could help advancing to reach an effective safe drinking water access for rural populations in the country.

### KEYWORDS

Drinking Water; Chemistry; Bacteriology; Pollution; Sourou; Burkina Faso

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