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Perspectives on Drinking Water Safety Planning with reference to arsenic in the Gold Mining Areas of Tanzania

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Access to safe drinking water is a prerequisite for human health and for a sustainable socio-economic development in global perspectives. However, occurrence of high levels of arsenic in surface water and groundwater in several countries across the globe puts millions of people at high health risk. This study aims at providing perspectives on water safety plan in the arsenic affected gold mining areas in Lake Victoria Basin of Northern Tanzania. A combination of Geographical Information Systems (GIS) and spatial statistics tools have been used to identify spatial processes influencing elevated concentrations of arsenic in drinking water sources from wells at depths ranging between 8-80 m. More than 70% of groundwater are characterized by As concentrations above the WHO drinking water guideline (10 μg/L). Among these, approximately 13 wells are located at high elevations (1200-1400 m above mean sea level) close to gold deposit prospects, while the remaining five shallow wells were located in the residential clusters along the gentle slopes. It was further envisaged that arsenic levels had negative correlation with depth. However, this was not significant based on the current sample size. Further study with increased sampling density is required to delineate the safe drinking water sources with reference to the prevalence of arsenic and other anthropogenic sources of contamination affecting drinking water safety.