Contribution of Geostatistics in the Analysis of Hydrogeochemical Data from the Baraka Gold Zone, Siguiri Prefecture, Republic of Guinea

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ABSTRACT

Groundwater is considered today as one of the major sources of drinking water supply for populations. Water pollution is a topical problem that concerns all regions concerned with maintaining their water heritage at a high level of quality. This concern affects the area of Baraka, located in the prefecture of Siguiri where significant mining activity has been carried out for centuries. Mining activities (industrial and artisanal) and more other activities such as agriculture and livestock breeding pollute the water resources of the Baraka area. The objective of this research is to determine the origin of pollution from mining and agricultural activities on groundwater in the study area. Principal Component Analysis (PCA) and Inverse Distance Weighting (IDW) were applied to the hydrogeochemical data from 33 boreholes. The results showed that water pollution is governed by phenomena of geological, anthropogenic and industrial origins. Water modeling techniques can be decision support tools to protect communities residing in mining areas of the country.

Keywords: Geostatistics, Siguiri Prefecture, Hydrogeochemistry, Groundwater pollution

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