

Geology and environmental impact of artisanal gold mining around kataeregi area, North-Central Nigeria

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Abstract

Geology and effect of artisanal gold mining was investigated in Kataeregi and environ, North-central Nigeria with the aim of determining its host rock and assessing the impact of such activity on the surrounding. Geological field mapping show the area comprise of the Migmatite-Gneiss complex, Schist, Granite and Sandstone lithologies. The geochemical analysis of the representative rock samples indicates probable Au, Ag and Hg mineralization (0.16ppm, 2.53ppm and 0.21ppm respectively on the average). Au is hosted by auriferous quartz veins within the Schist rock. Geochemistry of the sediment samples revealed the sediments are enriched with elements such as Au (0.23ppm), Ag (2.59ppm), Hg (0.21ppm) and Mo (1.14ppm). The water is earth-alkaline fresh water with high alkaline content, and mostly sulphate type. The average concentration of these elements in rocks and sediments were compared with published average crustal abundances of the elements in upper continental crust and the water compared with Nigerian Standard for Drinking Water Quality and World Health Organization Standards. Mining activity has impacted the environment with land degradation, loss of vegetation and erosion of soils. Trace elements like Hg in rocks and sediments, and Pb in water from the study area are potential toxic elements that can render water unfit, causes slow growth rate in plant and reproductive disorder in man.

Keywords: Geology, Artisanal Gold Mining, Sediment Geochemistry, Water Quality, Kataeregi, North-central Nigeria.

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