



# Retracted: Assessing Multi-element Pollution in Artisanal Gold Mining Areas: A Case Study of Koma Bangou (Niger)

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## Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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## ABSTRACT

Artisanal gold mining in Niger began in Koma Bangou following the 1984's drought, followed by poor harvests and famine in Niger. Gold panning had been going on at Koma Bangou since 1984, with the introduction of ore leaching in 2009. The aim of this work was to assess the multi-element pollution generated by ore processing at Koma Bangou. Geochemical data acquired with portable XRF analyzer, corrected with ICP-MS data, were used to assess the global pollution level in As, Cr,

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Cu, Mn, Pb and Zn using the pollution load index and the local soil-geochemical background data from Koma Bangou. Multi-element pollution generated by the ore processing was identified at the ore processing sites. It was extremely high in the acidification waste ( $PLI_{Mean} = 5.35$ ), and moderately high in the cyanidation waste ( $PLI_{Mean} = 1.98$ ) and the cyanidation area soils ( $PLI_{Mean} = 1.66$ ). The perimeter soils ( $PLI_{Mean} = 0.47$ ), located far from the cyanidation sites were not polluted. Multi-element pollution at the Koma Bangou cyanidation sites is anthropogenic, due to the use of chemicals in hydrometallurgical processing and the discharge of tailings into the environment. This pollution adversely affects the environment and the surrounding ecosystems. This can have an impact on human health through domestic and agricultural use of polluted soil and water.

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