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Assessment of Mercury Pollution in Rivers and Streams around Artisanal Gold Mining Areas of the Birim North District of Ghana

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ABSTRACT

Artisanal gold mining in local communities is on the increase. This has led to concerns about mercury pollution resulting from these mining activities. This study was conducted to assess the level of mercury pollution in rivers and streams around artisanal gold mining areas of the Birim North District of Ghana. Rivers, streams, sediments and boreholes were sampled to determine total mercury levels during the wet and dry seasons and to explore the potential impact of the mercury levels on water quality in the area. The results show that the total mercury concentrations measured upstream were significantly lower than concentrations in samples taken downstream. Also, the total mercury concentrations measured in the stream water samples in both seasons exceeded the WHO guideline limit (1.0 µg/L) for drinking water. However, one downstream total mercury concentration exceeded the guideline limit in the dry season. The total mercury concentrations in sediments upstream and downstream in both seasons exceeded the US-EPA guideline value of 0.2 mg/kg. The boreholes in the study area have total mercury concentrations exceeding the WHO guideline limit during both seasons. Total mercury concentrations in the boreholes in the wet season were lower than the dry season.

KEYWORDS

Mercury Pollution, Artisanal Gold mining, Birim North District, Ghana

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