

Environmental and Health Impacts of Mercury Use in Artisanal and Small-Scale Gold Mining in Sierra Leone.

Friday 17 January 2025 15:10 (20 minutes)

Artisanal and small-scale gold mining (ASGM) is a vital source of income for many rural communities in Sierra Leone, particularly young people and single mothers. However, the sector's reliance on mercury for gold extraction poses significant environmental and health challenges. Mercury is used for amalgamation due to its efficiency and low cost, but its release into water bodies, soil, and air causes widespread contamination, harming aquatic ecosystems and biodiversity. These pollutants bioaccumulate in the food chain, affecting human and environmental health beyond the mining sites. This study employs a mixed-methods approach, integrating quantitative data, qualitative insights, and geographical analysis from both primary and secondary sources. Findings reveal that while ASGM provides critical financial stability, the diminishing availability of near-surface gold has forced miners to dig deeper, increasing costs and risks. Approximately 4,000 artisanal miners collectively use an estimated 156 kilograms of mercury annually, exacerbating the environmental toll. Limited access to financial resources, technical expertise, and administrative support, combined with dependence on informal gold-purchasing networks, perpetuates unsustainable practices and non-compliance with environmental regulations. The study calls for targeted interventions to address economic reliance and environmental degradation, such as promoting mercury-free extraction technologies and supporting miners.

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Session Classification: Soil, Mining and other topics

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