

Heavy Metal Pollution in rivers due to Mining Activities in DR Congo: A threat to human health

Friday 17 January 2025 10:40 (20 minutes)

Democratic Republic of Congo has more than 2 500 exploited mining sites which play an important role in the country's economy. However, mining activities has led to a high presence of heavy metals that are toxic for humans and animals in aquatic systems. Here we assessed the impact of these pollutants on human health. Water samples were collected from various sites along major rivers surrounded by mining activities in Katanga, South-Kivu and Lualaba provinces. Heavy Metals such as iron (Fe), copper (Cu), cobalt (Co), zinc (Zn), lead (Pb), nickel (Ni), and chromium (Cr) in water samples were determined by using atomic absorption spectrophotometer. Hazard Quotients (HQ), Hazard Index (HI) and the Incremental Lifetime Cancer Risk (ILCR) were used to evaluate the toxicity levels in the local population. The concentration ranges of Cd, Pb, and Ni in water samples were higher than World Health Organization drinking water recommendations and guidelines. The health-risk estimation indicated by HQ, HI, and ILCR were above the acceptable limit, representing carcinogenic risk to the residents via oral intake and dermal adsorption of water near mining sites. The findings highlight the urgent need for effective regulatory frameworks and sustainable mining practices to mitigate heavy metal pollution, preserve aquatic ecosystems as well as local populations, and protect the livelihoods of communities dependent on these vital water ecosystems.

Author: KULIMUSHI, Alain (University of Bayreuth)

Presenter: KULIMUSHI, Alain (University of Bayreuth)

Session Classification: Water

Track Classification: Water