

Energy dispersive X-ray fluorescence analysis of mine waters from the Migori Gold Mining Belt in Southern Nyanza, Kenya.

Abstract

Analyses of water samples from Mikei, Osiri, Masara and Macalder (Makalda) gold mines of the Migori gold mining belt of Southwestern Kenya were done to determine the level of heavy metals using the Energy Dispersive X-ray Fluorescence technique. The concentrations of the heavy metals were; copper (29.34 ± 5.01 - $14,975.59 \pm 616.14$ $\mu\text{g/L}$); zinc (33.69 ± 4.29 - 683.15 ± 32.93 $\mu\text{g/L}$); arsenic (958.16 ± 60.14 - $18,047.52 \pm 175.00$ $\mu\text{g/L}$) and lead (19.51 ± 5.5 - 214.53 ± 6.29 $\mu\text{g/L}$). High levels of arsenic and lead were noted. These heavy metals are not only dangerous to the lives of miners and the local inhabitants; they are also a threat to aquatic life since these waters finally find their way into Lake Victoria