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Assessment of Heavy Metals and Natural Radioactivity Materials about Ngwenya Iron Ore Mine: Environmental Impact amongst Food Chains

Environmental pollution is attributed mainly to poor management of municipal solid waste and chemical disposal. Of great concern are heavy metals which emanate from both natural and anthropogenic processes, and these end up in soil, water, air and the interfaces thereof. Heavy metals are very toxic even at low concentrations, and they can bio-accumulate to toxic levels when frequently consumed.

The sole purpose of this study was to assess the presence of heavy metals in water and soil about Ngwenya Iron Ore Mine. Soil and water samples were collected from selected locations at close proximity to this abandoned mine.

Soil sampling was done at a site whose latitude is 31°00'58.8"E, and longitude is 26°13'28.5"S at the Ngwenya Iron Ore Mine. A total of six water samples were collected from a stream about 26°22'37.1"S, 31°01'08.7"E of Ngwenya Iron Mine. The Eswatini Water Services Corporation laboratories were used for purposes of water sample analysis. Due to travel bans imposed by the World Health Organisation for Covid-19, soil samples could not be transported for further analysis at iThemba Labs in neighbouring South Africa.

Results showed elevated levels of manganese and lead ions in the water streams found about the mine. The mean concentration of manganese ions in the water samples was found to be 0.0813 mg/L and that for lead to be 0.031 mg/L.

High levels of Mn and Pb can be harmful to both plants and animals, including human beings. It is thus crucial that humans dependent on water streams about Ngwenya Iron Ore Mine be sensitized on the heavy metals for safety and sustainable consumption.

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