

Terrestrial Radioisotopes in Black Shale Hosted Mn-Carbonate Deposit (Úrkút, Hungary)

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A b s t r a c t

Previously, little attention has been paid to terrestrial radioisotopes (U, Th, ⁴⁰K) occurring in manganese ores, despite the fact that the biogeochemical relationship between Mn and U is versatile. Occurrence of terrestrial radioisotopes in great amounts during mining on a long-term causes significant radiation exposure. It is important to inspect black shale-hosted manganese ores from this aspect, as black shales are typically potential U-rich formations. Despite the increased radon concentration in the mine, based on the detailed major elements, trace elements and gamma spectroscopy inspection of the rock types of deposit, the U, Th enrichment was undetectable. However, the U and Th content of about average terrestrial abundance of the great ore amount may be in the background of the increased radon concentration level. This Mn-carbonate ore deposit in spite of the low U content exhibit potential radon danger for miners, which can be eliminated with intensive air change only.

Key words: manganese; black shale; trace elements; radioactivity; uranium.