

Sedimentation conditions of mineralized bituminous limestones in the La Sota sector, Puyango, Ecuador

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Several samples of bituminous limestones and cretaceous black shales of V, U and Zn mineralization from La Sota, Ecuador, were analyzed chemically, being determined by the elementary relationships of V/V+Ni and V/Cr proposed by several authors [1,2], that the sedimentation conditions of these rocks varied from oxic to mostly anoxic, including several samples that were deposited under euxinic conditions.

An isotopic analysis of $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ was made in several selected samples, according to which the sediments were deposited in marine waters, subsequently they suffered a high temperature (80°C) diagenesis, even in a marine environment. According to the isotopic analysis of $\delta^{13}\text{C}$ to the organic matter from the samples, these possibly correspond to marine type. This could indicate that V may be associated with marine porphyrins [3].

[1] Hoffman *et al.*, (1998) Regional stratigraphic variation in bottom water anoxia in offshore core shales of Upper Pennsylvanian cyclothems from Eastern Midcontinent Shelf (Kansas), U.S.A. [2] Jones, B., Manning, D., Comparison of geochemical indices used for the interpretation of paleoredox conditions in ancient mudstones, *Chem. Geol.* **111** (1994) 111. [3] Gao, Y.Y., et al., Vanadium: Global (bio) geochemistry, *Chem. Geol.* **417** (2014) 68.