

# SEG 2022 Conference: Minerals For Our Future

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## Preliminary Analysis of Zn and Ni Sulfides in Calcareous Black Shales, Puyango, Ecuador

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The mineral occurrence of Puyango, Ecuador, contains high values of several critical metals: vanadium (mean 2051 mg/Kg; maximum 7220 mg/Kg), zinc (mean 939 mg/Kg; maximum 5610 mg/Kg), nickel (mean 255 mg/Kg; maximum 1160 mg/Kg), among others. It is hosted in black calcareous shales and black limestones from the Puyango Formation of Cretaceous age. Analysis of selected samples were carried out by Electron Probe Microanalysis (EPMA), identifying Fe, Zn, Ni and Cu sulfides: pyrite (including framboid pyrite), sphalerite, millerite and chalcopyrite (in smaller quantities). Preliminary results indicate anoxic to euxinic conditions during sedimentation, according to elemental ratios in bulk composition of black calcareous shales and black limestones by ICP-MS: (U/Th > 4.8), (V/(V+Ni) > 0.6), (V/Cr > 4.8).