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Mining and Seasonal Variation of the Metals Concentration in the Puyango River Basin—Ecuador

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Author(s)

Maria Eugenia Garcia, Oscar Betancourt, Edwin Cueva, Jean Remy D. Gimaraes

ABSTRACT

The Puyango River Basin covers approximately an area of 4400 km^2, it is located in Southern of Ecuador, with Calera and Amarillo rivers as tributaries. In this region, one of the main activities is small scale gold and silver mining. Currently there are 110 processing plants on the bank of Calera and Amarillo rivers, causing a significant degradation of natural resources. A seasonal comparison of metal concentrations in surface water, sediments and particulate matter from the Puyango River and its effluents is made. It was done a differentiation between natural contaminations with the anthropogenic one generated by mining activity. Samples were taken during dry season (2004) and rainy season (2006), and analyzed physicochemical parameters, anions and cations and the concentrations of heavy metals. The results show a clear influence of gold mining in Puyango River contamination, starting with its tributaries, Calera and Amarillo rivers, which have the highest concentrations of heavy metals from the basin, corresponding with the location of the mineral processing plants.

KEYWORDS

Heavy Metals; Gold Mining; Puyango River Basin

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