

## **HYDROGEOCHEMISTRY OF METALS IN TAXCO, MÉXICO**

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Mining is one of the most important economical activities of México since the 15th Century. Different kinds of residues associated with the extraction and processing of metals constitute potential environmental pollution sources. Taxco has been one of the main silver producing locations of Mexico since prehispanic times. Old and recent tailing piles resulting from the processing of Ag, Au, Pb, Cu and Zn minerals are located inside and near the city. The study presented here was developed to evaluate the concentration of metals in waters from Taxco-Taxco El Viejo, and to study their hydrogeochemical behaviour. Water samples from rivers and wells were taken in the area. Alkalinity, pH, Eh, conductivity and T were measured in the field. Cr, As, Zn, Cu, Fe, Pb and major ions were analyzed in the laboratory. Greater concentrations of Zn, Pb and Fe were found in the samples obtained near the tailing piles or the mines. Most of the waters corresponded to the bicarbonate and sulfate calcium type. Lower Eh values and higher sulfate concentrations were obtained in waters influenced by the tailings. High concentrations of arsenic (0.339 mg/L) were detected in waters leaching from one of the tailings. This water is used as a potable water source in one small community near Taxco. Concentrations of Pb (up to 0.097 mg/L) over the drinking water standard were found in some dug wells. Oxidation of tailings was shown to be releasing metals to the superficial waters in the area. Metal transport in the rivers may be influenced by iron oxi-hydroxides solubility. Environmental and water-management measures should be taken to eliminate the environmental risk.