

Water Quality Parameters in Iron Mine Regions, Quadrilátero Ferrífero, Minas Gerais State, Brazil

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Preliminary studies of some water quality parameters in iron exploitation areas of the Quadrilátero Ferrífero (MG) indicate that the dam reservoirs are efficient for the retention of a great deal of the suspended solids. On the other hand, the composition of the superficial mine waters possesses relatively high physical-chemical parameter values such as alkalinity, conductivity, Fe, Mn, Ca and Mg, when compared with the composition of source waters of the same area. The high alkalinity and Na values result from the sodium hydroxide utilization in the iron ore beneficiation plant. The anomalies of Fe, Mn, Ca and Mg derive, mainly, from the remobilization and the dissolution of these elements from the host rock minerals and from the iron ore itself. In spite of these anomalies the pH values (6,5 and 7,5) are acceptable, according to brazilian legislation.

Other important water chemical contamination sources, being studied in the iron mine exploitation areas, are the effluent of the workshop installations (greases and fuels), laboratories (mercury chloride) and the iron ore beneficiation process (amine and sodium hydroxide). Mercury is the most prejudicial element observed in iron mine contaminations. It could have its origin either by mercury chloride in the laboratories (iron titration) or by contamination from the sodium hydroxide manufacture (mercury electrodes).