ARSENIC IN WATER AND SEDIMENT IN THE IRON QUADRANGLE (MINAS GERAIS STATE), BRAZIL.

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The gold production in alluvial placers in the Iron Quadrangle region started at the end of 17th century, and the gold production, up today, was around 540 ton. The tailings produced in the past by mining were discharged directly into drainage until 1980. The gold ore is rich in arsenic with the As/Au ratios ranging from 300 to 3000, and the arsenic discharged in drainage is estimated, at least, to 150000 ton. The main source of arsenic in the region is the iron sulfides rich ores (pyrite and arsenopyrite). The weathering of the ore bodies promotes the oxidation of sulfides and the liberation of As to the environment. In the Iron Quadrangle region, the highest arsenic concentrations are found near mines, where the river bottom sediments were contaminated by tailings discharge during three hundred years. In surface drainage water the dissolved arsenic concentration ranges from 2 to 160 mg/L whereas in the sediments the concentrations range from 20 to 2830 mg/kg. Although the present mine operation do not contribute to this situation, there are a potential risk for arsenic hazard in some areas promoted, for instance, by the dispersion of old tailings by flooding, consumption of contaminated ground water or ingestion of dust from poisoned soils.