
Cerro Rico de Potosí, Bolivia – Broader Impacts from Unabated Acid Mine Drainage

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Abstract Intensive mining and processing of the polymetallic sulfide ore body of Cerro Rico de Potosí (Bolivia) has occurred since 1545 and likely less intensively in pre-Colombian times from the 10th to 15th centuries. Mining for Ag, Sn, Pb, and Zn with no or minimal environmental controls has led to severe degradation of surface and subsurface waters, stream sediments, and soils at the headwaters of the economically vital, yet highly impacted, Rio Pilcomayo. Human populations are at risk as elevated concentrations of ecotoxic metals have been noted in local produce irrigated with impacted waters. Previous studies documented extremely elevated concentrations of a relatively limited suite of metals (*e.g.* Al, As, Cd, Cr, Cu, Fe, Mn, Pb, Zn) in local waterways from acid mine drainage (AMD), terrestrial and in-stream tailings, and ore processing plant discharges. However, contamination from a wider assortment of ecotoxic metals was considered likely due to the highly mineralized polymetallic nature of the ore body. To further investigate AMD discharges and their link to downstream contamination, data were gathered during two sampling events in the most extreme periods of the dry and wet seasons of one water-year. Concentrations of Ag, B, Ba, Mo, Sb, Se, Sn and V in AMD and receiving streams were greater than Bolivian discharge limits and receiving water body guidelines as well as international agricultural use standards. Results indicate that contamination from mining has a larger scope than previously understood and underscore the importance of remediation.

Keywords Acid mine drainage, tailings, historic, acid rock drainage

