Distribution behaviour of selenium, cobalt, molybdenum and cadmium in copper smelting process under dust recirculation

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ABSTRACT

Usually dust generated from copper smelting in Chile contains high concentrations of copper and arsenic, but also other metals of considerable value and some environmental interest such as selenium, cobalt and molybdenum. It is desirable to understand the behavior of those elements when the smelting process operates with dust recirculation. In this study, the effect of dust recirculation to smelting process on the distribution among the matte, slag and gas phases were evaluated as a function of matte grade, amount of recirculated dust, oxygen enrichment and temperature. Experimental results show that selenium can be concentrated at high matte grade ranges and high oxygen enrichments in blowing gas. However, the result suggested that high recirculation amounts to smelting process are not feasible because it increases the minor metal losses.

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