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334-48 Bioaccessibility of Cadmium and Lead in Tailings from a Zinc Smelting Area in Brazil.

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Soils and wastes enriched with heavy metals may present ecological and human health risks. A considerable number of mining/smelting areas exist in Brazil, where high levels of metals have been found. However, studies of bioaccessibility of metals in soils/tailings from these areas are scarce, despite their potential informational contribution concerning exposure risks for residents near these areas. This study evaluated tailings collected from four sites of a zinc smelting area located in Brazil with aims to: (i) evaluate the presence of metals of potential concern; (ii) investigate Cd and Pb bioaccessibility; and, (iii) determine the desorption kinetics of Cd and Pb. High concentrations of total Cd and Pb (up to 1743 mg Cd kg⁻¹ and 8675 mg Pb kg⁻¹) and great variability were found in the tailings, indicating the importance of adequate planning for their final disposal, in order to avoid contamination in the surrounding environment. Cadmium and Pb bioaccessibility percentages in the intestinal phase were less than 47 and 4%, respectively, which represents significant fractions not available for absorption in the intestinal tract. However, this material has to be monitored since its bioaccessibility may increase with eventual physicochemical changes, releasing Cd and Pb. Desorption kinetics experiments revealed that the Pb in the samples remained in less labile fractions whereas Cd was found in more labile fractions, which is in accordance with the bioaccessibility results. Sponsored by CNPq, CAPES, and FAPEMIG.

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