

Anthropogenic contamination of lead in soil and water as a result of the production of automotive batteries in the city of Belo Jardim, Pernambuco - Brazil

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For decades the city of Belo Jardim (Pernambuco) has received environmental impacts caused by production and reprocessing of automobile battery casings and for hunting pellets. Nowadays effluents and lead smelter slags of some small business are released to ecosystems after ineffective treatment. The present work aims to evaluate environmental impacts to the soil and to the water caused lead and associated metals (Ag, As, Sb and Sn) in alloys used in the production of automotive batteries and hunting pellets. To achieve the main objective eight sampling points sites were selected and soil and water samples were collected in the dry and wet season. Soil samples were of two types: surface and profile core samples. Profile core samples were sectioned at 5cm intervals and together with surface samples were subjected to chemical analysis (atomic emission spectrometry) and 37 elements were analyzed, including Pb, As, Ag, Sb and Sn. Particle size analysis and organic matter content were also performed. The results were treated using uni and multivariate statistical meth-

ods. Water samples were analyzed only for lead by atomic emission spectroscopy. Among the chemical elements analyzed in the soil lead was the one with highest concentration, ranging from 276 to 124,500 mg.kg⁻¹. In the water Pb concentration ranged from 0.0151 to 34,77mg.L⁻¹. Ag, As, Sb and Sn showed lower concentrations as they are trace constituents in the original alloy used for the production of lead-acid batteries. The points that showed the highest contaminants concentration are located closer to two small lead smelting businesses. The geochemical scenario in which the municipality of Belo Jardim is inserted needs an environmental monitoring due to the high intrinsic toxicity of the metal used in the lead metallurgy.

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