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Antimony mobility in soils located in the surroundings of an abandoned mining site(SE, Spain)

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The purpose of this work was to study antimony distribution and mobility in a calcareous, semi-aridic zone affected by old mining activities, and next to assess its possible incorporation in the trophic chain through the natural vegetation. A distinctive feature of the work is the attempt to establish a possible relation between the mineralogy of the soils and antimony mobility. Knowledge of the main mineral phases present in the soils, a point that is often forgotten, will help to clarify the fate of the elements in this type of studies.
The mineralogical composition of the soils is obtained, and the samples classified into three groups attempting to correlate antimony level and behavior with the main mineral phases present. The total antimony concentrations are measured (5–40 mg kg^{-1}), and mobility of the metalloid is assessed by using selective extractants. Maximum mobility is obtained when extracting with a reducing-complexing medium which, taking into account the characteristics of the zone, means antimony availability to plants should be low. This is verified by analyzing both roots and leaves of vegetation growing in the area. The maximum level present in the leaves is 1.5 mg kg^{-1} dry matter, but most of the samples show antimony concentrations below 0.5 mg kg^{-1}. The results indicate that plants represent an effective barrier to antimony that is incorporated only in small proportions, and so the risk posed to biota is low.