



Use of selective chemical extractions as a strategy for the risk assessment in sites with a high level of potentially toxic elements

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The present study deals with the geochemical fractions of Pb, Cd, Zn and As present on profiles using chemical simple extraction process. This work was conducted on Portman Bay, a site located in the SE Spain and strongly affected by mining activities.

Four simple extractions were applied to selected samples in order to evaluate the potential mobility of metals. X-ray diffraction (XRD) and scanning electron microscopy coupled to with an energy-dispersion spectrometry (SEM-EDS) were applied for the characterisation of both the samples and the residues remaining after each extraction, providing additional information about the sediment phases carrying the elements studied.

Soil pollution assessment was carried out using the contamination factor (CF) and the pollution load index (PLI) for total contents, and indicators of mobility for each extraction: natural mobility indicator (NMI), acid mine drainage mobility indicator (AMI), oxic mobility indicator (OMI) and anoxic mobility indicator (ANMI).

The results obtained after the extractions suggested that the highest PTEs content were extracted in the acidic medium. The mineralogical composition is an important factor that should be taken into account in the evaluation of PTEs mobility, firstly because the mineral phases react differently in the proposed situations depending on their chemical nature, and secondly, because the presence of a particular phase (with different degree of reactivity) depends on the degree of weathering.