



Soils affected by heavy metals due to old mining on perudic conditions

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The aim of this work is to assess the actual status of the soils of a natural environment surrounding an abandoned mine (exploited since the Roman Age) where Pb, Zn, Fe and Cu were obtained. The study has been carried out in the Aitzondo valley (Guipuzkoa, North of Iberian Peninsula), which cross the exploited mountainous area with middle temperatures and perudic soil moisture regime Soils in the valley are polygenic, acids, very washed and sometimes show redoximorphic features and have undergone a great mobilization of trace metals due to these physical-chemical characteristics that enhance the heavy metals solubility and mobility. The analysis of soil surface samples shows a punctual and intense pollution at Meazuri area (where the mine is located) and another more dispersal and wide pollution due to the parent material (Palaeozoic shales).

The main soil type of the area has been characterized by means of the performance of a soil and six surface samples have been collected along an altitudinal transect, which goes down from 460 to 75 meters. Both profile and surface samples have been analysed for suitable parameters due to their repercussion in mobility and fixation of some heavy metals (organic matter, clay content. . .). Total (Na, K, Mg, Ca, Al, Fe, Mn, Ti, Cd, Cr) and extractable fraction (using NH₄Ac-EDTA pH=4.65, as extracting agent, have been analysed. Trace elements Cd, Cr, Cu, Ni, Pb and Zn have been measured.

On summary, the soils studied are characterized by high levels of trace metals inherited from the parent material whose composition shows a great metallic richness. Hence, values of trace metals are very high even in remote areas where there has not been anthropic influence. Besides, the physical-chemical properties (acidity, base saturation, organic matter) have enhanced the mobility of trace metals. The anthropogenic activity (mining activity) has caused an increase in values of several metals, reaching, in some cases, concentrations above the levels established by legislation.