

Relation between diatom communities and the degree of AMD affection in selected water dams in Iberian Pyrite Belt

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Abstract

In mining regions the presence of water reservoirs affected by AMD is a common problem. This study is part of a project that characterizes the water dams in the Spanish Iberian Pyrite Belt, in order to achieve a classification based on the effects by AMD. This preliminary work presents data from four selected dams: mining dams (Gossan and Águas Ácidas), for industrial use (Sancho), and for human supply (Andévalo).

The main objectives are: i) to describe the water and sediment properties; ii) to characterize diatom communities, and iii) to find possible relations between diatoms and the degree of AMD. Chemical composition of water and sediments was determined by AAS and ICP-MS. XRD was performed for mineralogy (bulk and clay fractions). Diatoms were sampled from sediments. Identification and quantification were performed in slides mounted with Naphrax®. Results indicate that the four dams are subject to the effect of metallic loads from polluted rivers, although with different levels: Águas Ácidas>Gossan>Sancho>Andévalo. In accordance, diatom communities have differences in composition and dominant diatom taxa. *Pinnularia acidophila* and *P. aljustrellica* were found dominant in the most acidic dams (Gossan and Águas Ácidas), *Pinnularia subcapitata* was dominant in Sancho and *Eunotia exigua* in Andévalo.