

## **Acid mine drainage: A possible source of Rare Earth Elements**

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Acid Mine Drainage (AMD) is an unwanted pollution that is expected to flow out from coal and sulfide mines for hundreds of years. AMD hosts Rare Earth Elements and Yttrium (REY) concentrations up to two orders of magnitude higher than those in continental waters and oceans. AMD passive remediation systems neutralize AMD with a calcite, leading to a sequential precipitation of Fe(III) and As as schwertmannite and Al and Cu as hydrobasaluminite. Practically all REY are concentrated in the Al-rich precipitate. Sorption onto amorphous hydrobasaluminite ( $K_d$  between 100 and 150 kg/L) is the major process postulated for REE retention. A preliminary survey from the Iberian Pyrite Belt AMD treatments shows that the REY rates in the residues range between 0.03 and 8% REY<sub>2</sub>O<sub>3</sub>. Therefore, AMD remediation systems may provide a new and almost inexhaustible natural source of REY that is sustainable and beneficial for the environment.