

Geochemical Controls of Salinity in a Typical Acid Mine Drainage Neutralized Groundwater System

Authors : Modreck Gomo

Abstract : Although the dolomite and calcite carbonates can neutralize Acid Mine Drainage (AMD) and prevent leaching of metals, salinity still remains a huge problem. The study presents a conceptual discussion of geochemical controls of salinity in a typical calcite and dolomite AMD neutralised groundwater systems. Thereafter field evidence is presented to support the conceptual discussions. 1020 field data sets of from a groundwater system reported to be under circumneutral conditions from the neutralization effect of calcite and dolomite is analysed using correlation analysis and bivariate plots. Field evidence indicates that sulphate, calcium and magnesium are strongly and positively correlated to Total Dissolved Solids (TDS) which is used as measure of salinity. In this, a hydrogeochemical system, the dissolution of sulphate, calcium and magnesium form AMD neutralization process contributed 50%, 10% and 5% of the salinity.

Keywords : acid mine drainage, carbonates, neutralization, salinity

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