

ENVIRONMENTAL IMPACT AND ACID DRAINAGE IN MINERAL EXPLOITATION: A CASE STUDY IN CUNDINAMARCA, COLOMBIA

PRIETO., G.

Minerals in Cundinamarca are exploited by small and medium operations that use underground and surface systems, and they have not involved appreciable levels of technology in none of the mining stages. As main environmental effects can be mentioned acid drainage generation, taken place by sulphides oxidation (pyrite present in the mineralised body); particulate matter production (dust) that is emitted to the atmosphere, surface waters, soils, biota and to the labour force (health and safety risk). Also it is important the improper disposal of wastes, that affect soils, waters and biota; biota and soils affectation as product of vegetal cover removal, and over use of forest resources. As positive socio-economic effects can be mentioned employment and royalties generation, as well as impulse to the economy. pH and conductivity measurements allowed to evidence acid mine drainage occurrence (AMD), which contains high levels of ions in solution, possibly heavy metals (toxic) leached from the mineralised body. Along the carboniferous area, acid mine drainage (pH 2.6-5.5) with high values of conductivity (up to 3000 μ S/cm) were detected. Previous data, showed that although total sulphur contents in Cundinamarca's coal are quite low (0.84%), correlation among acidity generation (AMD) and sulphur concentrations (pyrite FeS₂) in the exploited coal exists. Although the AMD causes economic losses and they produce affectation on the biota, soils and waters, studies do not exist about their characterisation. AMD characterisation study is recommended in this area, as basis to propose mitigation and remediación plans for those affected mining areas.