Geophysical Research Abstracts,
Vol. 10, EGU2008-A-01278, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-01278
EGU General Assembly 2008

Petrology, mineralogy and environmental geochemistry of mined coal in Maghara, Sinai

A. Melegy (1) and S. Salman (2)

(1) Environmental Geology, Comenius University, Bratislava, Slovak, (2) Geological Department, National Research Centre, Cairo, Egypt. (amelegy@yahoo.com, phone: +421-9497-16735)

Mining information, mineralogical investigation of coal, oxidation of pyrite and water quality data were studied and interpreted in order to assess environmental impacts of the discharges from the abandoned Maghara coal mine, northern Sinai, Egypt. Samples outcrops of Jurassic coal seam of Maghara mine have been analyses for their proximates, ultimates, ash constituents and trace elements. Microscopic observations have revealed that the coal is mainly composed of vitrinite, liptinite and inertinite macerals. Vitrain plays an important role in the outbreaks of spontaneous combustion because it absorbs oxygen more than other coal components. XRD analysis shows that the minerals in coals are mainly quartz, calcite, dolomite, kaolinite, hematite, magnetite, jarosite as well as some oxidized weathering products such as gypsum and anhydrite are also present. Calorific values of weathered coal samples range from 4763 to 5717 cal/g and of fresh coal samples range from 7206 to 7422 cal/g. Coal lose up to 35.8 % of its calorific value, which indicates that weathering process is extensive. The minewater samples were characterized by the presence of elevated concentration of Fe and SO42-, liberated from oxidation of pyrite. In general, the cessation of the mine lead to release of harmful trace element to the environment such as Zn, Cu, Mn, Fe, Ni, Pb and Cd.