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Petrographic And Geochemical Relationships And Environmentally Significant Trace Element Contents Of Miocene Coals in The Çayırlı (Erzincan) Area, Eastern Anatolia, Turkey

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This study has done related to the petrographic, coal-quality and the environmental influences of the Çayırlı coal field in the Eastern Anatolia. The region is one of the best examples of a continental collision zone in the world and located in a North-south converging collision zone between the Eurasian and the Arabian Plates. The geological units on the North of the basin are the peridotites and on the South, the Upper Triassic to Lower Cretaceous limestone. Tertiary sedimentary units also occupy a significant part of the geological features. Lower Miocene sediments include recifal limestone, marls, green clay and coal seams. The Çayırlı mining area in Eastern Anatolia region, contains these Miocene aged coals. These coals is characterized by high vitrinite and inertinite and low liptinite contents. The coals are Bituminous coal rank, with vitrinite reflectance ranging from 0.53 to 0.58%. Chemically, the coal in this study is characterised by low moisture, ash yield and sulfur content. The Çayırlı coal consist mainly of SiO_2 and CaO, with secondary $Fe2O_3$, $Al2O_3$, and minor proportions of TiO_2, P2O5 and other oxides. Several trace elements of environmental concern namely As, U and Be in Çayırlı coal are above the world averages, while Ni and Pb concentrations are less than the world average. However, As, Co, Cr, Ni, Pb, U and V contents of this coal are below Turkish averages. It can clearly observed that the concentration of the elements is highest in the high ash coal levels. Among the potentially hazardous trace elements, Be, Co, Ni, Se and U may be of little or no health and environmental concerns, wheras As, Pb, Sb, and Th require further examination for their potential health and environmental concerns. These properties may be related to evaluation of the coal forming environment from more reducing contitions in a marine influenced lower delta plain environment for investigated coals. On the basis of analytical data, there is no possibility that the Çayırlı coals could be used for residential heating or industrial applications; when used, they cause significant of air pollution and healt problems.