Geochemical study of the Mulid River sediments, southeast of Qayen to determine weathering rate, sediment contamination rate and environmental risk assessment of metallic elements

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Abstract

The Mulid River catchment is located in the southeastern of Qayen city, South Khorasan Province. In this study, geochemical characteristics of Mulid river sediments are provided in order to investigate climatic conditions and sediments contamination rate. The use of discriminant, bivariate and ternary diagrams suggests the mafic igneous provenance and the oceanic island arc tectonic setting for these sediments. The mentioned data suggest a mafic igneous provenance for these sediments. The calculation of some indices such as CIA, PIA and ICV show that these sediments are related to the first depositional cycle and suffered low weathering. Investigation of the contamination rate of the studied river sediments by heavy metals indices shows that the source of sediment pollution is natural factors and the environmental risk of these pollutants is very low.

Keywords*: geochemistry, weathering rate, metallic elements indices, contamination rate, Mulid River, southeast of Qayen*