

**GEOCHEMICAL ASSESSMENT OF HEAVY ELEMENTS IN SEDIMENTS
OF MAIN WADIS OF WESTERN PART OF MOSUL CITY, IRAQ**

Abstract

To assess the quality of sediment as it is an essential environmental indicator of water contamination due to sediments represent a permanent or temporary trap for various pollutants, a geochemical study was performed for sediments of four main wadis (Ugab, Al-Yarmoukm, Al-Ein, and Al-Mamoun) in the western part of Mosul city, Iraq.

Mosul city is surrounded from the western side of the right part by high areas represented by Atshan, Sheikh Ibrahim, Adayah, and Allan anticlines, this topographic situation imposes the wadis to pass the city towards the Tigris River. These wadis contain sediments derived from the exposed rocks of Fat'ha Formation which consist of limestone, gypsum, and marl rocks in addition to the Quaternary deposits and soils. These wadis pass from residential areas with high population density and diverse activities (domestic, industrial, commercial, and agricultural), so these wadis are used as dumping sites for solid waste and wastewater.

Twenty-five samples were analyzed chemically by X-ray fluorescence technique to determine the major and minor oxides, heavy elements in the German-Iraqi laboratory at the University of Baghdad. The organic matter and loss on ignition were performed in the geochemical laboratory at the department of geology in Mosul University. The major oxides were; SiO₂ (25.22-37.22) wt%, CaO (20.32-33.59) wt%, Al₂O₃ (5.50-8.31) wt%, Fe₂O₃ (3.86-6.10) wt%, MgO (2.15-4.30) wt%, and CO₂ (7.42-16.79) wt%, minor oxides were; TiO₂ (0.52-0.78) wt%, Na₂O (0.37-1.08) wt%, K₂O (0.88-1.16) wt%, P₂O₅ (0.12-0.63) wt%, SO₃ (0.23-1.39) wt%, and Cl (0.01-0.05) wt%, Organic matter (OM) was (4.47-17.72) wt%. Heavy elements were; Cr (170-399) ppm, Ni (91-157) ppm, Cu (27-151) ppm, Zn (83-735) ppm, Pb (12-536) ppm, and As (4-10) ppm