

# Assessment of Heavy Metals Contamination in Groundwater: A Case Study of the South of Setif Area, East Algeria

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## Description

Heavy metals in groundwater were analyzed and their sources and impacts were identified using multivariate statistical tools and risk assessment. Three significant factors were extracted by factor analysis (FA), explaining 75.69% of total variance. These factors were in turn described by the clusters C3, C2 and C1, respectively, resulting from the cluster analysis (CA). Factor analysis and cluster analysis revealed significant anthropogenic contributions and water-rock interaction effects of the metals in groundwater. The mean values indicated of heavy that the metal groundwater evaluation samples index (HEI) were and contaminated degree of contamination with high degree (Cdeg of) indices pollution by cadmium (Cd) and lead (Pb). The hazard quotients (via ingestion) of Cd and Pb were found to be higher than the safe limits, posing threat to the consumers. However, no risk related to the dermal contact was associated with the measured metal levels.