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Assessment of cemetery effects on groundwater quality using GIS

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ABSTRACT

Groundwater pollution is a global challenge with potentially serious outcomes. Therefore, the main resources of water pollution such as cemetery should be considered to control this challenge. The main objective of the present study was to investigate the contamination potential of a cemetery with Islamic culture by detection of various chemical and biological factors in higher depth and show the results in geographic information system. During this study, nine wells were selected from the cemetery area, the vicinity of the cemetery and upstream of the cemetery groundwater flow. After sampling in three time periods, hydro-chemical and biological factors including electrical conductivity (EC), pH, total dissolved solids (TDS), phosphorous, nitrates, nitrites, chemical oxygen demand (COD), fluoride, potassium, sodium, sulfate, chloride, lead, *E. coli*, heterotrophic plate count and fecal streptococci were detected. Analysis of the obtained data revealed that there was a direct relationship between measured pH, EC, chloride, sodium, phosphate, TDS, and lead as heavy metal in taken samples from cemetery wells and blank wells. However, this relationship was not statistically significant for potassium, alkalinity, COD, nitrite, nitrate, sulfate, and phosphate ($p < 0.05$). According to the obtained data, cemeteries have a great potential to contaminate aquifers.

Keywords: Cemetery; Decomposition; Groundwater quality

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