Assessment of ground water vulnerability using the DRASTIC method (Case study from arid regions of Kermanshah and Ilam, west of Iran)

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Abstract
Ground water contamination has been a matter of concern in developing agricultural areas which is prone to pollution by fertilizers such as nitrates. In arid parts of Kermanshah and Ilam provinces due to the transference of water from Sirvan River by tunnel and channel, agricultural industry especially irrigation technology has been developed in a rush. Ground water is not easily contaminated, because many aquifer systems possess a natural capacity to attenuate and thereby mitigate the effects of pollution. Once this occurs, it will be difficult to remediate. The replacement cost of a failing local aquifer is generally high and its loss may influence other water resources. Further, in the developing countries, such remediation might practically be impossible. Thus it is important to identify which aquifer systems and settings are most vulnerable to degradation. The main aim of this research was to evaluate extend of ground water contamination in some agricultural plains in arid regions of Kermanshah and Ilam based on the DRASTIC model. The electrical conductivity (EC) values are assigned to verify some parts of the DRASTIC vulnerability map; largely this arises from the lack of adequate nitrate information. In all plains, EC is in agree with vulnerability map except for Somar, due to the presence of Gachsaran Formation which increase EC dramatically.

Key words: the DRASTIC map, water contamination, aquifer vulnerability, electrical conductivity.