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Identifying and Prioritization of Factors Affecting Groundwater pollution in Zahedan City by AHP

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Abstract

The purpose of this study was to identify and prioritize the factors affecting groundwater pollution in Zahedan. Due to the limited groundwater resources in Zahedan city, it is necessary to reduce their pollution. For this reason, in this study, the factors that pollute groundwater resources were identified and prioritized in relation to Zahedan city to determine which factor has the most important impact. This research is applied in terms of purpose and descriptive-survey in terms of research method. This research was conducted in two stages. The first stage, the descriptive part of the study, which identified the factors affecting groundwater pollution in Zahedan. To achieve this, domestic and international articles and dissertations were used. The second stage is the field part of the research, which has prioritized the factors affecting groundwater pollution in Zahedan city. The identified factors from the first stage were designed in the form of a questionnaire and answered by 15 water and wastewater experts and the Environmental Protection Organization of Zahedan city who have the most work experience and are more proficient in the subject. The validity used in this questionnaire was confirmed by experts and its reliability was confirmed using the incompatibility rate. In this research, hierarchical technique and Expert Choice software were used to prioritize the factors. The 14 identified sources of infection were defined in 2 groups of origin with human and non-human pollution. Human factor with a score of 0.875 versus non-human factor with a score of 0.125 was identified as the most important pollutant of groundwater resources in Zahedan city. In the human factor group, non-monitoring factor with a score of 0.328 as the most important pollutants, agricultural activities with a score of 0.28 and pesticides with a score of 0.136 were in the next priorities. In this group, industrial activities with a score of 0.035 were identified as the least important pollutants. In the non-human factor group, nitrate factor with a score of 0.267 as the most important pollutants, arsenic with a score of 0.18 and waste with a score of 0.148 were in the next priorities. In this group, plant foods with a score of 0.062 were identified as the least important contaminants. A total of 14 identified pollutants, non-monitoring factor with a score of 0.279 as the most important source of pollutants, agricultural activity with a score of 0.238 and pesticides with a score of 0.115 were in the next priorities. Among these 14 factors, plant foods with a score of 0.009 were identified as the least important factor.

Keywords: Pollution, Groundwater, Zahedan City, AHP.