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ASSESSMENT OF NITRITE AND NITRATE POLLUTION OF GROUNDWATER IN THE KIZILIRMAK GRABEN, CENTRAL ANATOLIA, TURKEY USING GIS APPLICATIONS

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Abstract

The nitrite (NO_2) and nitrate (NO_3) contents of groundwater play an important role in determining the areas of water use and are considered one of the important problems in terms of health. In this study, the nitrite (NO_2) and nitrate (NO_3) contamination of groundwater in residential and agricultural areas of Kızılımak Graben, one of the important neotectonic structures of the region, located in the northern region of Nevşehir province (Turkey), was investigated. Nitrite (NO_2) and Nitrate (NO_3) were determined in the laboratory by ion chromatography (IC) according to TS EN ISO/IEC 17025 standards for 20 groundwater samples collected in May 2019 (wet) and October 2019 (dry) to represent the variation of wet and dry periods in the study area. Nitrite (NO_2) was measured between <0.01 and 0.05 mg/L and nitrate (NO_3) was measured between 0.67 and 103.57 mg/L. Nitrite (NO_2) and nitrate (NO_3) values were compared with national and international standard values. In order to seasonally evaluate the change in the amount of nitrate (NO3) in the study area and to estimate the pollution parameters in the unmeasured areas, distribution maps were created using the interpolation technique based on the IDW (Inverse Distance Weighting) method, one of the GIS-based geostatistical analysis techniques.

Key words: central Anatolia, groundwater, Kızılırmak graben, nitrite pollution, nitrate pollution, Turkey

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