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GEOGRAPHIC INFORMATION SYSTEM BASED APPROACH FOR THE INVESTIGATION OF GROUNDWATER NITROGEN POLLUTION NEAR A CLOSED OLD LANDFILL SITE IN BEIJING, CHINA

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Abstract

Groundwater pollution investigation near old and closed landfill sites is increasingly attracting more attention. Nitrogen compounds, especially those leached from the landfill area, are often regarded as a main pollution source for the groundwater. This study investigated the nitrogen pollution in the groundwater near a closed old landfill area of Beijing, China. The field investigation showed that the nitrate-polluted groundwater was determined as Class VI (refers to bad quality) at the detection rate of over 70% in three out of seven wells. The detection rates of nitrate-polluted groundwater of Class V (refers to bad quality) were more than 50% in four out of seven wells. Geographic information system (GIS) was employed to evaluate the groundwater contamination and investigate the spatial-temporal distributions of the nitrogen pollutants in the shallow groundwater. Elevated concentration of ammonium was observed during May and September when the weather was fairly warm and precipitation was plenty. Extreme concentrations of ammonium were only observed in the area near the well W26, which is adjacent to an old landfill. Nitrate pollution was determined to be severe in the study area based on the detected nitrate concentrations. During winter (November 2007 to January 2008), the nitrate contamination became more severe.

Key words: ammonium, geographic information system, groundwater, nitrate

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