Desalination and Water Treatment
www.deswater.com

doi: 10.5004/dwt.2021.27569

241 (2021) 269–275
November

The impact of industrial pollution on urban groundwater resources

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Received 25 June 2021; Accepted 23 September 2021

ABSTRACT

To promote the sustainable development of groundwater resources in China and form an environment where industry and resources coexist harmoniously, industrial pollution causes large emissions, wide pollution ranges, and difficult treatment of groundwater resources to be further alleviated. The water resources research digital model and the MODFLOW model are selected to carry out the research on the current situation of groundwater resources pollution, and the water pollution situation of Plant A is selected as a research example. Firstly, through the collection and analysis of a large number of samples, the characteristics of groundwater pollution in Plant A are revealed. Secondly, combined with field geological surveys and hydrogeological tests, the hydrogeological conditions of the study area and the nitrogen fertilizer plant are ascertained. Finally, according to the verified solute transport model analysis, the pollution law of the characteristic pollutant (ammonia nitrogen) in the loose groundwater of the contaminated site of the nitrogen fertilizer plant is studied. The results of the study show that pollutants migrate slowly in the impermeable layer of surface silty clay, and the diffusion of pollutants is mainly vertical. The concentration of pollutants has a significant effect on the diffusion rate. The higher the concentration of pollutants is, the faster the diffusion rate is. In the vertical direction, the pollutant diffusion rate is also related to the pollutant carrier. The continuous leakage of wastewater is faster than the rainfall infiltration method. After the pollutants enter the deep silty sand confined aquifer, the pollutants accelerate to the direction of lower hydraulic gradient, and the migration speed shows a trend of uniform diffusion. Therefore, the groundwater pollution research is provided with new reference and reference materials, and the pollution problem of groundwater resources in China can be further alleviated.

Keywords: Industrial pollution; Groundwater; Simulation experiments; MODFLOW

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