Study on the removal of nitrate in groundwater from Căpuş, Cluj county by natural zeolite of Mirşid and granular activated carbon

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ABSTRACT

This paper focuses on a comparative study regarding the performance of natural zeolite from Mirşid (NZM) and granular activated carbon (GAC), respectively, for treatment process of contaminated groundwater from Căpuş, Cluj region for nitrate removal. The effect of pH, conductivity, contact time, and nitrate concentration have been studied. The Langmuir and Freundlich models were used to fit the experimental data and these showed good correlations with the Freundlich model, providing a better description of the equilibrium (higher R^2 value). Textural analysis was employed in order to determine the specific surface area, and pore size distribution of the used activated carbon and natural zeolite. The adsorbents (GAC and NZM) were characterized by using Fourier transform infrared spectroscopy and x-ray powder diffraction.

Keywords: Groundwater; Granular activated carbon (GAC); Natural zeolite of Mirşid (NZM); Nitrates (NO_3^-); Adsorption

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