

Removal of nitrates from water by Amberlite IR-400 and economic Duolite A-378 ion exchange resins

Zahraa Hameed Al-Agili

Department of Biochemical Engineering, Al-Khwarizmi College of Engineering, University of Baghdad, Aljadria, Baghdad, Iraq, email: engzahraahameed@gmail.com

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ABSTRACT

Water contaminated with nitrates is one of the environmental problems that Iraq suffers from as a result of sewage deposit that is discharged into rivers. In addition to agricultural fertilizer waste, old and dilapidated water pipes extend in densely populated areas throw dirt directly into the rivers. To reduce the material cost effort and time for the researcher and everyone who is concerned with purifying water from nitrates. The economic (Duolite A-378 weak base anion exchange resin) alternative to the high cost (Amberlite IR-400 strong base anion exchange resin) of removing nitrates from the water was tested, and a regression model was also found using MINITAB-19 statistical program to compare the accuracy of the practical results with what is theoretically expected. Linking the variables together and measuring the extent of their impact on nitrate removal rate. The results were summarized in the approaching efficiency of (Duolite A-378 weak base anion exchange resin) to remove nitrates, but with the increase in the quantity more than (Amberlite IR-400 strong base anion exchange resin). There was also an increased response to the removal of resin when increasing the concentrations corresponding to a decrease in the removal rate when increasing the speed of mixing and this is due to the strength of the ionic attraction.

Keywords: Ion-exchange; Resin; Nitrate removal; Amberlite IR-400; Duolite A-378
