

## **Experimental study and numerical simulation of denitrification in saturated porous media**

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**Abstract:** The effect of denitrification on the behavior of nitrate in saturated sandy soil was studied in the laboratory and the results were compared with the temporal and spatial concentration of nitrate in nonreactive (without denitrification) and reactive (with denitrification) cases. A laboratory model was fabricated to study steady one-dimensional flow and to transport nitrate with or without denitrification. Denitrification at various rates has been simulated with varied C:N ratios and detention time. Retardation constant, dispersivity, and degradation constants have been computed using existing analytical models supporting adsorption and zero and/or first order production or decay. It was found that such analytical models can be used to fit the concentration of nitrate in saturated porous media for a C:N ratio between 2 and 5.