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Solute transport in horizontal two-dimensional homogeneous porous media: Dispersion being temporally dependent

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Analytical solutions are obtained for two cases, first one for uniform and second for increasing input source by using Laplace transform technique for temporally dependent dispersion along a uniform flow in a horizontal two-dimensional semi-infinite domain. Due to human activities and other responsible sources of pollution, the domain (groundwater) is not solute free. It is combination of exponentially increasing function of position variable and ratio of zero order production and first decay which are inversely proportional to dispersion coefficient. The variable advection–dispersion equation is reduced into constant coefficients by introducing new space and time variables. Results and discussion are given with set of numerical values of various parameters and effects of these parameters are shown in graphs.

Biography

Dilip Kumar Jaiswal has completed his Ph.D. from Department of Mathematics, Faculty of science, Banaras Hindu University, Varanasi in 2009 and he is working as a Postdoctoral Fellow in the Department of Mathematics & Astronomy, Lucknow University, Lucknow since Dec. 2009. He has published more than 21 papers in International and National Journals.

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