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Modeling of contaminant transport resulting from dissolution of a coal tar pool in a stratified saturated porous medium

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A two-dimensional numerical model is developed for simulating the transport of dissolved contaminants originating from dissolution of a coal tar pool in a stratified, saturated porous medium. The simulated porous medium consists of two sand strata, a high hydraulic conductivity upper stratum and a low hydraulic conductivity bottom stratum. The coal tar pool is trapped on top of the bottom stratum. The numerical model is used to simulate multicomponent contaminant plume evolution within the stratified aquifer. Results show that the transport characteristics among dissolved coal tar components vary significantly. Furthermore, for the scenario considered in this study, migration of solutes below the pool may eventually reach and contaminate a deeper water-bearing stratum.