

## Diffusion in Natural Porous Media

Contaminant Transport, Sorption/Desorption and Dissolution Kinetics

introduces the general principles of diffusion in the subsurface environment and discusses the implications for the fate and transport of contaminants in soils and groundwater. Emphasis is placed on sorption/desorption and the dissolution kinetics of organic contaminants, both of which are limited by the slow speed of molecular diffusion. compiles methods for calculating the diffusion coefficients of organic compounds (in aqueous solution or vapor phase) in natural porous media. The author uses analytical solutions of Fick's 2nd law and some simple numerical models to model diffusive transport under various initial and boundary conditions. A number of these models may be solved using spreadsheets.

The book examines sorption/desorption rates of organic compounds in various soils and aquifer materials, and also examines the dissolution kinetics of nonaqueous phase liquids in aquifers, in both the trapped residual phase and in pools.

concludes with a discussion of the impact of slow diffusion processes on soil and groundwater decontamination and the implications of these processes for groundwater risk assessment.

Diffusion in Natural Porous Media: Contaminant Transport, Sorption/Desorption and Dissolution Kinetics introduces the general principles of diffusion in the subsurface environment and discusses the implications for the fate and transport of contaminants in soils and groundwater. Emphasis is placed on sorption/desorption and the dissolution kinetics of organic contaminants, both of which are limited by the slow speed of molecular diffusion. Diffusion in Natural Porous Media: Contaminant Transport, Sorption/Desorption and Dissolution Kinetics compiles methods for calculating the diffusion coefficients of organic compounds (in aqueous solution or vapor phase) in natural porous media. The author uses analytical solutions of Fick's 2nd law and some simple numerical models to model diffusive transport under various initial and boundary conditions. A number of these models may be solved using spreadsheets. The book examines sorption/desorption rates of organic compounds in various soils and aquifer materials, and also examines the dissolution kinetics of nonaqueous phase liquids in aquifers, in both the trapped residual phase and in pools. Diffusion in Natural Porous Media: Contaminant Transport, Sorption/Desorption and Dissolution Kinetics concludes with a discussion of the impact of slow diffusion processes on soil and groundwater decontamination and the implications of these processes for groundwater risk assessment.



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