# COMPARISON OF NAPHTHALENE DIFFUSION AND NONEQUILIBIRUM ADSORPTION-DESORPTION EXPERIMENTS. (S01-gamst063134-Poster)

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## Abstract:

The separate effects of sorption and diffusion on effective HOC diffusion are not fully understood. In this study, effective diffusion of naphthalene in five unsaturated soils was evaluated by; (i) naphthalene adsorption-desorption experiments (batch method) (ii) naphthalene effective diffusion experiments (half-cell method) and (iii) trace gas diffusivity experiments (chamber method). The five soils showed varying degree of adsorption non-linearity and adsorption-desorption non-singularity. Three effective diffusion coefficients were calculated from the half-cell experiments, one based on the whole concentration profile (Deff), one based on the profile from the source (desorption) half-cell (Deff,D), and one based on the recipient (adsorption) half-cell (Deff,A). Deff, Deff,A, and Deff,D values (half-cell method) were only to some extent accurately estimated from Freundlich isotherm parameters (batch). Defining a half-cell non-singularity index, H = Deff,A/Deff,D, it was found that H correlated with both batch non-linearity and non-singularity. Thus, batch sorption experiments may likely forecast the degree of nonsingular behavior in effective HOC diffusion.

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