



Sorption and transport of atrazine in an agricultural soil

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Atrazine is one of the most commonly used herbicides in large quantity worldwide. The objective of this study was to perform some batch and column experiments to examine the transport of atrazine in an agricultural soil from Turkey. Batch experiments indicated that sorption isotherm was nonlinear with a freundlich isotherm over a range of concentration (0.2–10 mg/L) examined. Column experiments showed that transport of atrazine in the soil was moderately retarded compared to non-reactive tracer ($R = 2.9\text{--}4.0$). The degree of retardation decreased with increasing atrazine concentration and residence time had negligible impact on degree of sorption. Flow interruption tests in the column experiments indicated that the rate-limited desorption of atrazine mainly controlled the non-ideal transport of atrazine due to the presence of organic matter fraction (0.83 %) in the soil. Sorption and desorption behavior of atrazine in such soils could have important impacts for risk assessment of atrazine-contaminated soil and should be taken into account in the regulation, management, and remediation of atrazine-contaminated sites.

Keywords: Atrazine, Agricultural soil, Batch, Column, Desorption, Rate-limited desorption, Sorption, Transport.