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## SORPTION OF 2,4-DICHLOROPHENOL TO SURFACE SOILS: NONEQUILIBRIUM-PHASE DISTRIBUTION

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### ABSTRACT

The nonequilibrium-phase distribution of the pesticide derivative 2,4-dichlorophenol (DCP) was studied in the context of two surface soils. DCP sorption was evaluated for five different initial aqueous concentrations of the solute -5, 10, 50, 100, and 500  $\mu\text{M}$ . Solute-soil contact times were 0.02, 1, 7, 14, 28, 56, and 84 days. Uniformly ring-<sup>14</sup>C-labelled DCP was used to improve detection limits and track the contaminant among various soil components. The sorbed DCP was subjected to a single water extraction, followed by sequential methanol and alkali extractions. <sup>14</sup>C activities associated with the different extracts, as well as the humic acid, fulvic acid, and soil/humin fractions, were quantified. Direct determination of solid-phase radioactivity was performed utilizing a biological oxidizer. The nonequilibrium-sorption behavior was expressed in terms of phase-distribution relationships (PDRs), sorption isotherms, hysteresis indices (HIs), and time-dependent distributions of the contaminant among various soil components.

**Key words:** dichlorophenol, adsorption, desorption, binding, hysteresis