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[\[PDF \(1118K\)\]](#) [\[References\]](#) [\[Supplementary Materials\]](#)**Sorption of Uranine on Forest Soils**[Kirill M. Gerke](#)¹⁾, [Roy C. Sidle](#)²⁾ and [Yomei Tokuda](#)³⁾

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Abstract:

Staining substances have been widely used to visualize flow paths in soils, and recently dye concentrations in soil profiles are quantified using photographs. Fluorescent dye Uranine is one of the promising staining agents. The sorption properties of Uranine are needed to establish initial concentrations in applied solutions, determine Uranine mobility, and model solute transport. At least 65% of Uranine adsorption on subsoils from Okaya, Japan occurred after 1 h of shaking. Subsequently, equilibrium sorption was assessed for six different forest soil samples, including topsoil, subsoil, and a buried organic-rich layer. Adsorption in all soil samples was significantly reduced by adjusting initial solution pH to 13. Adsorption was greater in topsoil; however, it was not significantly correlated with soil organic matter. The buried organic-rich soil experienced intermediate adsorption compared to topsoil and subsoil samples. Equilibrium adsorption data for both topsoil and subsoil samples best fit the Freundlich isotherm. In subsoils, Uranine sorption was comparable to reported values for Pyranine and commonly used Brilliant Blue FCF dye, while adsorption in topsoil samples from these forests (up to 21.7% organic matter) was significantly higher than reported values for agricultural soils.

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