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**MOBILITY OF SILVER AND SILVER NANOPARTICLES IN SOILS**

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*The use of silver nanoparticles (AgNP) has increased significantly over the past decade. The pathway of wastewater combines AgNP from different sources, e.g. clothes. High quantities of the redundant AgNP are removed from wastewater into sludges, which can become incorporated into soil upon sludge amendment. We hypothesise that positively charged silver ions (Ag<sup>+</sup> (aq)) are retained in soils by adsorption processes similar to other trace metals, whereas AgNP, stabilised with nonionic tenside, show different retention mechanisms. For investigating Ag<sup>+</sup>-mobility in soils, batch sorption experiments were conducted at a soil to solution ratio of 1:5 kg L<sup>-1</sup>. Thirty German top- and subsoils of varying pedogenic properties were treated with different concentrations of Ag<sup>+</sup> and AgNP, respectively. The retention of Ag<sup>+</sup> (aq) in the soils could be described by the Freundlich equation. Topsoil A horizons exhibited higher K<sub>f</sub>-values compared to subsoil B or C horizons due to their larger organic matter contents. In contrast, the retention of AgNP was best described by a linear distribution coefficient (K<sub>d</sub>). At equilibrium, the solution concentration of Ag was much higher compared to the experiments with Ag<sup>+</sup> (aq) indicating a significantly enhanced mobility of the AgNP compared to Ag<sup>+</sup> (aq) in the soils under investigation. We conclude that the mobility of the AgNP is mainly controlled by the associated anionic stabiliser, which impairs the sorption of AgNP to the soils. We presume, by reason of linear distribution coefficient, that there are no specific sorption sites for the AgNP used.*