Effects of Aging on the Kinetics of Nonexchangeable NH_4^+-N Release from Soils and Clays. D. STEFFENS* and D.L. SPARKS, Justus Liebig Univ. Giessen, Germany; Univ. of Delaware.

The rate of nonexchangeable NH_4^+-N release from soils can have a significant effect on nitrogen dynamics and environmental quality. The objectives of this study were to determine the effects of aging and indigenous vs. applied NH_4^+-N on the kinetics of nonexchangeable NH_4^+-N release from soils and clay minerals. A H-saturated resin technique was employed to study NH_4^+-N release over a period of 15 min to 16 days. The kinetics of nonexchangeable NH_4^+-N release were biphasic and could be described by both Elovich and parabolic diffusion models. The release rate was lower in subsoils than in topsoils and in soils that had primarily indigenous NH_4^+-N. "Aging" illite and vermiculite with NH_4^+-N for different times had an effect on the kinetics of NH_4^+-N release.