

A New Look at Natural Humics on Uranium Stability and Mobility

Humic substances – naturally forming organic materials in soil and groundwater, have been reported to enhance electron-transfer reactions from microbial metabolisms to contaminant metals and thus increase the reductive precipitation of metals. However, researchers at Oak Ridge National Laboratory recently found that humics, on the one hand, could enhance the biological reduction rate of U(VI) under anaerobic conditions; but on the other hand, humics form soluble complexes with reduced U(IV) and increase their oxidation rates under oxic conditions. These findings are significant because humics could present a potential challenge to immobilizing and stabilizing reduced uranium(IV) – a proposed remedial strategy for contaminated soil and groundwater due to low solubility of reduced U(IV) in subsurface environments. Future studies are therefore needed to address the long-term stability and retention of reduced U(IV) under realistic field conditions because the occurrence of humics in soil and groundwater is ubiquitous.

Reference: [Gu, B.](#); Yan, H.; Zhou, P.; [Watson, D.](#); Park, M.; Istok, J. D. **2005**. Humics impact uranium bioreduction and oxidation. *Environ. Sci. Technol.* (in press).

