Are bioassays useful tools to assess redox processes and biodegradation?

When evaluating potentials for natural attenuation, assessment of ongoing redox processes are important. Terminal electron accepting processes (TEAPs) such as denitrification, Fe(III), Mn(IV), and sulphate reduction and methane production have been assessed by several approaches including redox sensitive hydrochemical or geochemical parameters, levels of hydrogen, and redox potential. However, all these approaches have to be evaluated against TEAP-bioassays as the most direct measure. We assessed successfully ongoing microbial-mediated redox processes by TEAP-bioassays in degradation studies of aromatic and chlorinated aliphatic compounds in landfill leachate plumes, and of pesticides in aquifers with various redox conditions.

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