

EPR in the environmental control: copper complexes and free radicals in soil and municipal solid waste compost.

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Streszczenie

Quantitative EPR technique was applied to examine Cu(II) complexes and free radicals in soil and municipal solid waste composts. Production and stabilization of free radicals in humic and humic-like substances depend on transition metal containing red-ox systems in soil. Termination of the reaction pathways yields relatively stable semiquinone free radicals in the polyphenol and melanoidin matrices. EPR investigations of municipal solid waste composts in different stages of their maturity show distinct correlation between free radical concentration and microbiological activity. Copper(II) sorption by living microorganisms and formation of the copper(II) complexes by humic substances in soils (Cambisols and Luvisols) result in decrease of the concentration of the semiquinone radicals. The Cu(II) complexes formed by various natural humic and humic-like substances produced in the composts were characterized on the basis of EPR measurements. The process of solubilization of inorganic copper compounds in soil and composts, and free radical activity in soil and composts can be characterized using EPR technique as the monitoring method.

Adres publiczny

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Strona internetowa wydawcy

<http://link.springer.com>