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Soil and Water Research

The influence of heavy metals on soil biological and chemical properties

Friedlová M.:

Soil & Water Res., 5 (2010): 21-27

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Soil samples were collected at alluvial sites of the Litavka River, which flows through the Beroun and Přebram cities in Central Bohemia Region of the Czech Republic in 2005 and 2006. Higher heavy metal content in soils (Cd, Pb, Zn, Cu) is due to composition of the parent rock, emissions from lead processing industry and the leak of toxic material from the steel works sludge ponds in the 1970s and 1980s. The samples were collected from six sites located at different distances from the contamination source (the former sludge ponds) and chemical and biological properties were determined. The ratio of the microbial biomass carbon to oxidisable carbon content dropped down significantly on more heavily contaminated sites. Basal respiration activity did not correlate with the content of heavy metals in soil, but there was certain declining tendency with increasing intensity of soil contamination. Respiration activities significantly correlated with the total carbon, oxidisable carbon and the total nitrogen content. The metabolic quotient showed higher values with increasing contamination.

Dehydrogenases and arylsulphatase activities decreased with increasing contamination. Urease activity has also a declining tendency but its relation to different intensity of contamination was not unambiguous. Urease activity has shown a relationship with the content of total nitrogen in soil. No relationship was found between the total sulphur content and arylsulphatase activity.

Dehydrogenases, arylsulfatase and urease activities significantly correlated with the microbial biomass carbon.

Keywords:

biological activities; carbon; enzymatic activities; heavy metals; metabolic quotient; nitrogen; respiration activity; soil; sulphur

[[fulltext](#)]

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