

SUMMARY

Distributions of toxic trace elements were studied in soils before and after disturbance of their profiles. Two areas with different vegetation cover were selected: beech (*Fagus sylvatica*) and spruce (*Picea abies*) forests at the Načetín site in the Ore Mts. In the past, this area belonged to places with extreme levels of acidic atmospheric deposition. The studied areas are not placed too far from each other and have thus approximately the same climatic conditions, geological background and pollution input. On the other hand, physicochemical properties of soils (pH, CEC, BS, C_{tot}, S_{tot}) and concentrations of major and trace elements are different. At selected sites in spruce and beech stand, two soil probes to a depth of 40–50 cm were dug in 2010 and samples of individual soil horizons were collected for chemical analyses (approximately 0.5 kg). Four samples from L, H, A and B horizons were taken in the spruce forest area and five samples from L, H, A, B and C horizons were taken in the beech forest. In 2011, the sites were re-sampled and samples were taken from horizons that were disturbed in 2010, paralleled by samples of undisturbed soil horizons from the same probe sites. Trace element concentrations were determined by ICP-MS, the speciation of individual elements in the soils was determined by BCR - sequential extraction analysis. The results show that a change of the soil profile does not affect the distribution of trace elements. The behavior of toxic elements in both sites is similar: the levels of Cd and Pb in soil organic horizons of beech forests are higher compared to soils of spruce forest. Cadmium and Pb behave differently from As forming anionic species, occurring in the soil. Concentrations of toxic elements in soils of both stands do not exceed concentrations that could potentially threaten the soil life. Implementation period of the experiment was probably too short to record changes in soil properties that would affect change in their composition.

