

SUMMARY

Kutná Hora and its surrounding environment was affected by mining Ag, later Pb – Zn ore, lasting several centuries. As a result of mining, extreme concentrations of heavy metals and metalloids, especially As, in waters, soils and plants are. The aim of this work was to study the elemental composition of soils and tree rings, including processes between soil and plants on contaminated and uncontaminated area to describe biogeochemical processes between soil and plants. Elemental composition (V, Cr, Mn, Fe, Co, Cu, Zn, As, Cd, Sb, Tl, Pb) were determined in soils and tree rings of Scots pine (*Pinus sylvestris*) using ICP – MS. The measured concentrations of elements indicate contamination of soils and tree rings due to mining and metallurgical activities. The highest concentrations of As in soil (14 977 mg/kg) were found at contaminated site (Kaňk) at depth of 40 – 50 cm. This locality is situated on the heap, where waste from the mining and processing of ores are deposited, together with minerals and weathering products containing As. The uncontaminated area (Sukov) exhibited the maximum concentration of As in soils 124,38 mg/kg at a depth of 5 – 10 cm, due to the contamination by dust from the contaminated sites. The highest concentrations of As in tree rings were determined in the contaminated area (Kaňk) in the bark (2,12 mg/kg). The uncontaminated locality, exhibited highest concentration of As (1,04 mg/kg) in the bark. The highest concentrations of As in the bark originates from contamination by dust from Kaňk.

Key words: arsenic, tree rings, soils, mining