

**Summary:**

Arsenic relative bioavailability (RBA) in mine wastes is always lower than 100%. Total concentration of As at Kaňk varied between 87 and 15500 mg.kg<sup>-1</sup> in collected samples of road dust, urban soil and mine waste, however the bioaccessible amount of arsenic obtained with SRBC-G method was much lower (6-795 mg.kg<sup>-1</sup>). Crucial factors influencing arsenic bioaccessibility are pH value and solubility of mineral phases which are stable under given conditions of the sample. Although the highest total As concentrations were found in the mine wastes (9250-15500 mg.kg<sup>-1</sup>), these samples displayed the lowest As bioaccessibilities (5,1 ± 1,3%). This is probably due to the prevalence of poorly soluble Fe-arsenates and As-sulfides in the low-pH mine wastes. In the near-neutral samples of road dust and urban soil the As bioaccessibility showed slightly higher values (7,5 ± 2,6%; 8,2 ± 2,6% respectively). From the chemistry and mineralogy of the samples it is possible to recognize the mine wastes as the main source of As contamination in soil and road dust at the Kaňk village. The bioaccessibility of arsenic and other pollutants from the specific site provides more accurate data for the health risk assessment, although the valid in vivo/in vitro comparison doesn't seem to be revealed.