

Wachalowicz, A., Czaplicka-Kotas, A., Szalińska, E. Bioavailability of Chromium from Bottom Sediments for the Larvae of the Species *Chironomus riparius*. *Ochrona Srodowiska* 2008, Vol. 30, No. 3, pp. 53–58.

Abstract: Investigations into the bioavailability of chromium from river bottom sediments were conducted under laboratory conditions and *in situ*, using larvae of the species *Chironomus riparius*. Bottom sediments and water samples were collected within the area of the headwater basin of the river Dunajec, at the reference sites of Kowaniec and Sromowce Wyzne, as well as at the sampling sites of Limierzysko and Waksmund contaminated with chromium from tannery effluents. 96-hour chromium bioaccumulation tests were carried out using *Chironomus riparius* larvae obtained from a clean laboratory culture. Two laboratory tests were aimed at investigating the bioavailability of chromium, and one test (involving laboratory and *in situ* methods combined with the examination of the organisms of the family *Chironomidae* (at one sampling point of the family *Oligochaeta*) that occurred *in situ*) was performed with the aim to compare the results obtained under laboratory conditions and *in situ*. Determinations were carried out for chromium content in the organisms of *Chironomidae* and in the bottom sediments, the latter being also analyzed for the content of organic substances. The experiments have shown that chromium is bioavailable. Analysis of the results suggests that there is a threshold quantity of chromium in the bottom sediments, which is characteristic for the conditions occurring at the given sampling site. Below that quantity, no significant difference in the content of chromium in the *Chironomus riparius* organisms was observed between the samples tested and the control samples. When the threshold quantity was exceeded, chromium content in the organisms of *Chironomus riparius* increased. The findings make it clear that the non-uniform distribution of chromium content in the bottom sediments observed at the sampling sites can account for the discrepancy between the results of the investigations into the bioavailability of chromium. The study has also shown that the laboratory organisms are more sensitive to the polluted environment than the organisms living *in situ*. The data obtained furthermore suggest that the availability of chromium for the *in situ* organisms is influenced by the changing environmental conditions, and this is why no correlation can be found between laboratory and *in situ* tests.

Keywords: Bottom sediments, chromium, bioavailability, *Chironomus riparius*.