

Metal (Loids) Speciation Using HPLC-ICP-MS Technique in Klodnica River, Upper Silesia, Poland

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Abstract : The work allowed gaining knowledge about redox and speciation changes of As, Cr, and Sb ionic forms in Klodnica River water. This kind of studies never has been conducted in this region of Poland. In study optimized and validated previously HPLC-ICP-MS methods for determination of As, Sb and Cr was used. Separation step was done using high-performance liquid chromatograph equipped with ion-exchange column followed by ICP-MS spectrometer detector. Preliminary studies included determination of the total concentration of As, Sb and Cr, pH, Eh, temperature and conductivity of the water samples. The study was conducted monthly from March to August 2014, at six points on the Klodnica River. The results indicate that exceeded at acceptable concentration of total Cr and Sb was observed in Klodnica River and we should qualify Klodnica River waters below the second purity class. In Klodnica River waters dominates oxidized antimony and arsenic forms, as well as the two forms of chromium Cr(VI) and Cr(III). Studies have also shown the methyl derivative of arsenic's presence.

Keywords : antimony, arsenic, chromium, HPLC-ICP-MS, river water, speciation

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