

Marcinkowski, T.A., Banaszekiewicz, K.P. Efficiency of Chromium, Copper, Zinc and Nickel Ions Immobilization During Stabilization/Solidification of Electroplating Sludge. *Ochrona Srodowiska* 2008, Vol. 30, No. 4, pp. 53–56.

Abstract: Laboratory tests were conducted to assess the course and efficiency of immobilizing heavy metal (Cr, Cu, Zn and Ni) ions during stabilization/solidification of electroplating wastewater sludge with chemically active mixtures prepared on the basis of Portland cement. The efficiency of the stabilization/solidification process was established by testing the mechanical strength of the solidified product in a uniaxial compression apparatus, as well as by chemical analyses of the extracts from the TCLP (U.S. EPA) test and the PN-EN 12457-4:2006 Standard test. The sludge came from a wastewater treatment plant receiving effluents from a Lower-Silesian electroplating plant which specializes in the following processes: bethanizing, electroplating, nickelizing, copperizing and passivation with trivalent blue chromium. Water content in the sludge averaged 66.3%. Maturation of the solidified mixtures was carried out at 7 °C or 20 °C for 28 days. At the temperature of 7 °C it was necessary either to extend the time of maturation or to increase the proportion of cement in the solidifying mixture. It was found that in some instances the heavy metal ions in the sludge had been incorporated into the structure of the products obtained from the hydration of cement. Under unfavorable weather conditions the waste generated during solidification conducted *via* the route proposed can be safely disposed of after additional encapsulation, *e.g.* with bitumen or polyethylene.

Keywords: Electroplating sludge, heavy metals, stabilization, solidification, neutralization, Portland cement, fly ash, disposal.