

Grabas, K. Removal of Heavy Metal Ions from an Electroplating Effluent and the Clarified Water of the "Kowary" Tailing Pond (Jelenia Gora District, Lower Silesia). *Ochrona Srodowiska* 2009, Vol. 31, No. 2, pp. 49–54.

Abstract: The objective of the study was the removal of heavy metal ions from the wastewater that originates during manufacture of electroplated coatings, and from the clarified water that accumulated in the "Kowary" tailing pond for many years in the past. The tailing pond acted as a settling tank and, at the same time, received technological wastes from uranium ore dressing with the aim to obtain uranium concentrates. The wastewater being analyzed contained predominantly heavy metal cations (Cu(II), Fe(III), Cr(III), Zn(II), Ni(II) and Cd(II): 20–55 g/m³) occurring in such quantities that did not permit a direct discharge into the sewerage system. The study was conducted on a technical scale, using the method of precipitation with NaOH. The use of prototype technological solutions to the problem in question made it possible to remove the heavy metal ions from the clarified water and, more importantly, to take further measures aimed at closing down the "Kowary" tailing pond. A treatment train was proposed and the desired removal efficiency was achieved upon inclusion of such unit processes as coagulation (PIX-112), flocculation (polyelectrolyte F-81) and two-stage sorption of heavy metal cations on the mineral-carbon sorbent Hydrosorb G. In this way the efficiency of heavy metal ion removal (total content, Me<1.0 g/m³) and the quality of the wastewaters have been upgraded to such an extent that they can be discharged directly into the sewerage system.

Keywords: Industrial wastewater, clarified water, heavy metals, neutralization, precipitation, mineral-carbon adsorbent.