Czaplicka-Kotas, A., Slusarczyk, Z., Zagajska, J., Szostak, A. Variations in the Content of Some Heavy Metals Observed in Lake Goczalkowickie in the Time Span of 1994–2007. *Ochrona Srodowiska* 2010, Vol. 32, No. 4, pp. 51–56.

Abstract: The results of analyses show that Lake Goczalkowickie (impounding reservoir) has been contaminated with heavy metal ions. In the case of lead and zinc, and temporarily also in the case of copper, their concentrations are many times as high as the relevant geochemical background values. The occurrence of elevated metal concentrations in the water is attributable primarily to the anthropogenic sources located in the drainage area of the lake, such as industrial effluents, agricultural runoffs or fish farming. Exceptions are the concentrations of iron and manganese; their presence in the lake water is due not only to industrial pollution, but also the enrichment of surface waters by pit elution and contact with the artesian water that feeds the impounding reservoir. Analysis of the variations in the average annual metal ion content in Lake Goczalkowickie over the period of 1994–2007 has revealed an upward trend for iron and manganese, and seasonal variations in manganese ion content, which were the smallest in winter and the greatest in summer. The changes in the quantity of manganese ions can be linked with the changes in the oxygenation of the lake water (negative correlation). An average correlation was established between iron ions and manganese ions in the water. The results of calculations have made it clear that no statistically significant trends can be assigned to the average annual concentrations of copper, lead or zinc. As for the copper content, a temporary rise was observed in the early 1990s, after the reservoir had been treated with copper sulfate for algal control.

Keywords: Lake Goczalkowickie, manganese, iron, copper, zinc, lead, dissolved oxygen, carbonate hardness, seasonal variations.