Kucharski. M. Analyzing the Changes in the Quantity of Ozonation and Chlorination By-products in the Tap Water for the City of Bialystok. *Ochrona Srodowiska* 2011, Vol. 33, No. 3, pp. 47–51.

Abstract: The paper summarizes the results of many years' investigations into the occurrence of trihalomethanes (THM), haloacetic acids (HAA) and bromates (BrO_3^-) in the municipal water of Bialystok. Analysis of the data ob-tained has produced the following findings. Over the period when use was made of pre-chlorination, the chloroform content of the water was very high (155 to 194 mg/m^3), with a maximal value of 240 mg/m^3 in 1995. In 1998, when pre-chlorination was replaced with pre-ozonation, chloroform content varied from 12.2 mg/m^3 to 90.4 mg/m^3 (36.6 mg/m^3 on average), and the sum of trihalomethanes (TTHM) from 13.8 to 96.7 mg/m^3. In subsequent years the quantity of chloroform decreased continuingly from 200 g/m^3 (1995–1996), through 65 mg/m^3 (2006), to a level lower than 20 mg/m^3 (2009–2010). Over this period, the sum of haloacetic acids (THAA) fell from 8.4–126.6 g/m^3 (2004–2006) to 4.4–13.4 mg/m^3 (2009–2010). Upon introduction of the ozonation process, bromate content did not exceed the admissible value of 10 mgBrO_3^-/m^3, and in most instances its concentration in the tap water was lower than 5 mgBrO_3^-/m^3, the quantity of bromides in raw water ranging between 10.4 and 23.0 gBr^-/m^3. Analysis of the changes in the quantity of ozonation and chlorination by-products makes it clear that the modernization of the water treatment plant has noticeably improved tap water quality primarily with respect to the content of substances carrying serious health implications – THMs, HAAs and bromates.

Keywords: Chlorination, ozonation, oxidation by-products, trihalomethanes, haloacetic acids, bromide, bromate.