

Wlodyka-Bergier, A., Bergier, T. Characterization of Precursors to Volatile Water Chlorination By-products in the Krakow Water Distribution System. *Ochrona Srodowiska* 2011, Vol. 33, No. 3, pp. 29–33.

Abstract: The main focus of the study is the influence of the organic matter quality on the potential of chlorination by-products formation. Water samples were analyzed for the content of trihalomethanes (trichloromethane, bromodichloromethane, dibromochloromethane, tribromomethane), halogenoacetonitriles (trichloroacetonitrile, dichloroacetonitrile, bromochloroacetonitrile, dibromoacetonitrile), halogenoketones (1,1-dichloropropanone, 1,1,1-trichloropropanone), chloral hydrate and chloropicrin. The experiments were conducted with treated water samples (collected before disinfection with chlorine) from the water treatment plants Raba and Bielany, which provide the city of Krakow with municipal water. The organic substances present in the water were made subject to fractionation on ion-exchange resins (DAX-8, AG-MP-50 and WA-10). The products obtained from fractionation, *i.e.* hydrophobic and hydrophilic acids, hydrophobic and hydrophilic bases, and hydrophobic and hydrophilic neutral fractions, were chlorinated in water with sodium hypochlorite for 24 h. Chlorination by-products were analyzed by gas chromatography. Based on the analysis of the results obtained, the fractions characterized by the highest affinity for the formation of particular groups of volatile organic water chlorination by-products were determined.

Keywords: Chlorination by-products, natural organic matter, fractionation.