Michel, M.M., Kiedryńska, L., Tyszko, E. Manganese Removal from Groundwater on Modified Chalcedonite and Purolite MZ-10 Beds. *Ochrona Srodowiska* 2008, Vol. 30, No. 3, pp. 15–20.

Abstract: Groundwaters are frequently characterized by increased contents of Fe(II) and Mn(II) ions, which gives rise to the formation of soluble compounds. The removal of iron and manganese ions from water entails their oxidation to such forms that generate insoluble compounds, which can then be removed *via* a filtration process. The troublesome issues and undesired phenomena concomitant with the removal of manganese can be eliminated by filtration through a bed that contains Mn(IV) oxide as one of its components, and thus enables both adsorption and oxidation of the manganese dissolved in the water. The aim of our study was to determine the efficiency of manganese removal from groundwater by filtration through a chalcedonite bed modified with manganese compounds and (for comparative purposes) through a green sand bed MZ-10 made by Purolite. Removal efficiencies were assessed by water composition and usable capacity analysis, as well as by porosimetric and microscopic examinations of the two filter beds. The investigations have produced the following findings: (*i*) modified chalcedonite and MZ-10 bed provided a reduction of manganese content in the groundwater to the value admissible in water for human consumption; (*ii*) the usable capacity of the MZ-10 bed with respect to manganese coincided with the value of 0.7 gMn/dm^3 given in the manufacturer's specification, while the usable capacity of the modified chalcedonite bed was several times as high; (*iii*) the capacity of manganese removal from groundwater depended not so much on the specific surface area or internal structure of the filter medium as on the chemical structure of its surface layer.

Keywords: Groundwater, manganese removal, rapid filtration, chalcedonite, green sand, MZ-10, usable capacity of bed.