Zawierucha, I., Malina, G. Application of Zeolite to Trace Metal Removal from Groundwater in Permeable Reactive Barrier Systems (PRB). ***Ochrona Srodowiska*** **2014, Vol. 36, No. 1, pp. 39–44.**

Abstract: The laboratory results were presented aiming at evaluation of natural zeolite (clinoptilolite) potential as PRB material in removal of lead, zinc and cadmium from groundwater. It was demonstrated that efficacy of trace metal removal in jar tests depended on sorbent dose, initial metal ion concentration, groundwater pH and contact time. High efficacy of metal ion removal (>90%) was received using zeolite at a dose of 50 g/m^3 at pH=6÷7 and with contact time of 2 h. The continuous-flow column experiment allowed imitating conditions of contaminated groundwater flow through PRB. Performance of the zeolite permeable reactive barrier (>99%) remained effective for the time corresponding to 5÷6 zeolite bed volumes. Insignificant changes in groundwater pH and lack of interactions between zeolite and groundwater anions suggest longevity and stability of zeolite as the reactive barrier in groundwater remediation.

Keywords: Groundwater, trace metals, zeolite, adsorption.