

Bray, R.T. Groundwater Arsenic Removal in Integrated Coagulation/Microfiltration Process. *Ochrona Srodowiska* 2013, Vol. 35, No. 4, pp. 33–37.

Abstract: Pilot plant results of studies on arsenic removal from groundwater that contained 40 mgAs/m^3 , 0.7 gFe/m^3 , and 0.1 gMn/m^3 , using integrated coagulation/microfiltration process were presented. Iron sulfate(III) (PIX 112) water solution was used as coagulant in doses ranging from 0.5 to 19 gFe/m^3 . For the experimental purposes PVDF tubular microfiltration membrane with cut-off of 400 kDa was used. One direction (dead-end) flow was applied with pressure ranging from 0.1 to 0.2 MPa . It was demonstrated that at coagulant dose of 2.0 gFe/m^3 arsenic was brought down to below target value ($<10 \text{ mgAs/m}^3$), accepted for human consumption, while the retention coefficient exceeded 76% . Further increase in the coagulant dose led to only insignificant reduction in arsenic content in the purified water. In the dose range applied, there was only a trace amount of iron in the permeate. Arsenic removal was accompanied by reduction in water color intensity, UV-absorbance and chemical oxygen demand (COD). The process, however, was not effective for groundwater manganese removal.

Keywords: Water treatment, trace element, membrane process, tubular membrane.