

**Krupińska, I., Świdorska-Bróz, M. Effect of the Presence of Organic Substances on the Extent of Iron Compound Removal from Water *via* Oxidation and Sedimentation Processes. *Ochrona Środowiska* 2008, Vol. 30, No. 1, pp. 3–7.**

**Abstract:** The experiments involved groundwater samples with an increased quantity of organic substances contributing notably to the course and efficiency of iron compound removal. The study produced the following findings. The increase in the quantity of organic water pollutants was concomitant with a decrease in the efficiency of Fe(II) to Fe(III) oxidation in the presence of hydrogen peroxide and dissolved oxygen. The oxidation of Fe(II) ions involving hydrogen peroxide proceeded at a faster rate, though with a lower efficiency, than the one involving oxygen dissolved in water. What is more, hydrogen peroxide reduced color intensity and accounted for a lower rise in the turbidity of the water than did the aeration process. Regardless of whether  $\text{H}_2\text{O}_2$  or  $\text{O}_2$  was used as the oxidizing agent, the settleability of the oxidation products was so poor that even an eight-hour sedimentation appeared to be insufficiently long to provide an efficient removal of iron compounds, specifically Fe(III). In the course of sedimentation, inorganic iron complexes alone were removed whereas colloidal and dissolved fractions of iron stabilized by organic substances persisted in the water.

**Keywords:** Groundwater, iron removal, aeration, oxidation, hydrogen peroxide, iron-organic complexes.