Swietlik, J., Raczyk-Stanislawiak, U., Laskowski, T., Nawrocki, J. Model Investigations into the Migration of Some Elements from Cast Iron and Steel into Water Due to Pipe Corrosion. *Ochrona Srodowiska* 2011. Vol. 33, No. 3, pp. 71–76.

Abstract: The corrosion of cast iron and steel filings was investigated in a static model system in order to simultaneously assess water quality variations and the composition of the corrosion products. The phase composition of the experimental corrosion products was found to be comparable with that of the actual corrosion deposits in the water-pipe network. The quantity of the corrosion products ranged between 30% and 70% of the actual corrosion products collected from a relevant surface area of a pipeline in service. Furthermore, a successive migration of sulfides, phosphorus and manganese from cast iron and steel into the water was observed, which implies that the pipe material is a major source of origin for these elements in the tap water. At the final stage of the study, no phosphorus was detected in the water, which suggests microorganism growth in the model. Natural organic matter was gradually adsorbed onto the corrosion products being formed, which may give rise to biofilm formation. Zinc, silicon, calcium and magnesium were adsorbed onto the surface, and/or built into the structure, of the corrosion deposits. The results obtained indicate that experiments involving cast iron and steel filings may successfully simulate the processes occurring in the water-pipe network, and that the high specific surface area of the material used accelerates and enhances the corrosion process.

Keywords: Corrosion, water-pipe network, cast iron, steel, migration of elements, sulfides, phosphorus.