Zimoch, I. Operational Safety of the Water Supply System Under Conditions of Water Quality Variations in the Water-pipe Network. ***Ochrona Srodowiska*** **2009, Vol. 31, No. 3, pp. 51–55.**

Abstract: The procedure dealt with in risk analysis (risk matrix method) is reviewed, and the operational safety reliability of the water supply system under conditions of water quality variations in the water-pipe network is analyzed. Water quality variations in the pipes were assessed by analyzing the content of trihalomethanes (THM) at different points of the water-pipe network. Presented is also one of the elements of the safety analysis model (computer program 'Stany'), which – on the basis of the Monte Carlo method – makes it possible to determine the probability of the system's occurrence in one of the five water quality states defined. The model offers the possibility of analyzing events that randomly occur under real conditions of water distribution system operation and thus produce a potential hazard of the loss of safety reliability. Using the results of water quality analyses (THM) for the water supply system of the city of Wroclaw (referring to the time span of 2002–2007), the risk of exceeding the admissible chloroform concentration in the tap water was determined. The safety reliability analysis included both the variable operation state of the water treatment train and the unstable operating conditions in the water-pipe network.

Keywords: Water supply system, water-pipe network, risk analysis, safety reliability, Monte Carlo method, THM.