CHANGES IN WATER QUALITY OF A SMALL URBAN RIVER
TRIGGERED BY DEEP DRAINAGE OF A CONSTRUCTION SITE

Abstract

The paper presents the results of the monitoring of the selected physicochemical properties of the Jasień River waters (in Łódź, the third biggest city of Poland) and their changes under the influence of drainage of a railway station Łódź Fabryczna construction site. Even 25 years ago the Jasień River was a receiver for the sewage from the Łódź textile factories. The drainage of the excavations and disposal of the water into the Jasień River was started on January 2014 and changed stable hydrological, physical and chemical regime of the river once again. In a consequence, average monthly flows exceeded the Jasień River flow in its upper section by six times, and at the beginning by even ten times. Chloride concentration was systematically growing over the study period. This growth and higher water pH were probably associated with increasing level of contaminants in the discharged water and its gradually decreasing uptake. Average annual water temperature increased and a decrease in its amplitude was observed. The annual conductivity and pH patterns became more uniform and the changes in pH followed a clear trend of monthly changes. Water turbidity increased by two times and during summer floods this parameter was often even a few times higher than before the drainage commenced. Chlorides improved water conductance and sodium and potassium increased basicity.

Key words: environmental impact, stormwater quality, rehabilitation, urban development, urban hydrology, water quality