

The Use of Pre-dams with Plant Filters to Improve Water Quality in Storage Reservoirs – Włodzimierz Czamara, Alicja Czamara, Mirosław Wiatkowski

Summary

The paper presents the way of water quality improvement in storage reservoirs, using pre-dams with plant filters. Pre-dams, built above the main reservoirs, reduce the inflow of pollutants transported by the river and take over most of biochemical processes responsible for eutrophication of the stored water. As a result, water flowing to the main reservoir contains smaller loads of pollutants. The above-mentioned method is more economic, requires relatively short construction time and is less laborious than generally used methods of surface water protection. It is specially recommended to improve the quality of water in small reservoirs, where quick silting and eutrophication occur. Proper functioning of pre-dams depends on proper selection of their parameters, such as: water storage time, water flow velocity, filling depth and type of plant filters. The authors estimated the effectiveness of a pre-dam reservoir situated above the main reservoir in Mściwojów on the Wierzbiak River. Pre-dam reservoir consists of a three-chamber sediment tank and three chambers with plant barriers. The purpose of the facilities is to decrease the quantity of sediments, the biogenic substances and other pollutants carried with water flowing to the main reservoir. Research carried out during the period 2000–2001 showed that pre-dams significantly contributed to the improvement of the water quality in the main reservoir – nitrates were eliminated in ca 65% and phosphates in ca 52%.