

Abstract

This diploma thesis deals with monitoring of water quality in the reservoirs which form the Litovicko-Šárecká cascade. It is a cascade of ponds, waterworks and retention reservoirs situated on the Litovicko-Šárecký stream and is composed of 9 major reservoirs. These reservoirs have different functions: from landscaping, retention, biological as well as recreation: fishing and swimming. Many of these reservoirs flow through human settlements, which have a negative impact on the quality of water within the whole cascade. The goal of this thesis is to monitor physical and chemical indicators of water as well as to determine the composition of phytoplankton populations, assess the state of water depending on the human activities in the basin and also to monitor how has the water quality changed in time and what are the main pollution sources.

The water quality was determined from 11 samples collected with monthly intervals during March 2012 to May 2013. Samples were collected on all the reservoirs from the inflow, in the middle and at the outflow for chemical analysis and only from the middle for biological analysis. The following indicators were monitored: temperature, pH, conductivity, dissolved oxygen, indicators of neutralization capacity ($ZNK_{8,3}$ a $KNK_{4,5}$), hardness, COD_{Mn} , the concentration of ammonia, nitrate and nitrite nitrogen, phosphates, concentration of calcium and chloride. Gained results were compared with the values given in the Government Regulation 61/2011 Sb. about the indicators and accepted pollution of surface and underground waters and with the values given in the ČSN 75 7221 – Quality classification of surface waters. The composition of phytoplankton communities was also determined focusing on cyanobacteria occurrence.

It has been found that at all sampling points the quality is unsatisfactory according to the ammonia nitrate concentration, and at almost all sampling places for dissolved oxygen. Classification of water quality from the sampling places showed that 3,75% points belong to the 5th class, 7,7% to the 4th class, 59.23% to the 3rd class and 29.6% to the 2nd class, according to the concentration of ammonia nitrate. The cascade is quite loaded with all forms of nitrate and with phosphorus. The biggest impacts on the water quality have the two WWTP in Chyně and Hostivice towns as well as the runoff from agricultural lands. The big load of nutrients manifests in occurrence of algae blooms in the warm time of the year. There have been determined mainly cyanobacteria *Planktothrix agardhii*, *Anabaena flos-aquae* and *Anabaena* spp. *affinis*. Algal bloom has been noticed mainly on the lakes from the middle flow and it is a response to the environmental conditions. These reservoirs are source of cyanobacteria inocula for the entire cascade. Generally the water in the Litovicko-Šárecký stream is unsatisfactorily polluted and it is one of the worst in Prague.