II Simpósio PPGERHA
Ciência e Tecnologia:
do princípio ao propósito
Curitiba - PR - Brasil
16 a 18 de Outubro de 2019

PHOTODEGRADATION OF NATURAL ORGANIC MATTER IN THE PASSAÚNA RESERVOIR (PR), BRAZIL

Carolina Ferreira de Souza[1]
Heloíse Garcia Knapik[2]
Júlio César Rodrigues de Azevedo[3]

ABSTRACT: Aquatic organic matter may be natural or anthropic origin. In reservoirs resulting from damming of rivers, a significant part may originate from submerged vegetal biomass by the inundation and vary according to the implementation procedures adopted (*e.g.*: deforestation before flooding or maintenance of local vegetation). When coming from outside the aquatic environment through the runoff at the catchment, it varies qualitatively and quantitatively, depending on the land use and soil occupation around the reservoirs. Understanding the changes in the concentration, composition, and distribution of aquatic organic matter is fundamental for the analysis of water quality and its variability as a function of seasonality, depth and hydraulic condition. Different mechanisms works in degradation of aquatic organic matter, such as biodegradation and photodegradation, as well as sedimentation and transport processes. Thus, the objective is to investigate if photodegradation is a conditioning mechanism in the processes of degradation and transformation of organic matter in the water column, evaluating whether the origin, type and composition of organic matter influence water quality in the Passaúna reservoir/PR. The spatial and temporal variability of the organic matter was evaluated by applying the visible ultraviolet absorption spectroscopy techniques and the fluorescence emission-excitation matrix combined with the dissolved organic carbon concentration. The photodegradation percentages of the organic matter were also determined and the nutrient concentrations were verified. Significant variation was expected as a function of the incident irradiation differences between the depths of the water column, however, it was modest, and the variation with the longer irradiation time was more significant. Current results should be compared with two more experimental test repetitions to verify possible climatic influence and comparison with photodegradation of patterns with defined initial organic matter. It is desired to obtain a better basis for inferences about water quality from the photodegradation of organic matter and, finally, the viability of extrapolating the results from the Passaúna reservoir to other similar reservoirs in the subtropical climate.

Keywords: Photolysis of organic matter. Aquatic organic matter. Water quality. Reservoirs.

[1] Eng. de Pesca e Mestranda em Eng. de Recursos Hídricos e Ambiental, Universidade Federal do Paraná, Curitiba, PR, carolina.ferreira@ufpr.br
[2] Prof.ª Dr.ª, Universidade Federal do Paraná, Curitiba, PR, heloise.dhs@ufpr.br
[3] Prof. Dr., Universidade Tecnológica Federal do Paraná, Curitiba, PR, jcrazevedo.utfpr@gmail.com