ORGANIC MATTER CONTRIBUTION IN DIFFUSE POLLUTION EVENT DRIVEN BY RAINFALL EPISODES

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ABSTRACT: Rainfall episodes input vary compounds into the river, which can cause pollution and water quality degradation. One of them is organic matter, commonly indicated by dissolved organic carbon (DOC) quantification. However, there is spectroscopy measurements that provide quality information and characterization about organic contents. Therefore, the objective is to characterize organic matter inputs, in terms of DOC, possible source identification and predominant organic matter structure. The study was conducted in Barigui River, in a monitoring site located in Almirante Tamandaré city, called BA01. The main land use and soil occupation of BA01 drainage area is vegetation and pasture, with respectively percentages of 62.05 and 24.24%. The monitoring site did not receive point sources, which allows the diffuse pollution monitoring. Samples were collected during rainfall events, using an automatic sampler, which was programmed to sample according to the water level variations due to rainfalls. It was measured DOC, and spectroscopy techniques were applied to characterize organic matter. It was generated Excitation-Emission Matrixes (EEM), extracted peaks A, B, C, T_1 and T_2, and calculated Fluorescence Index (FI), Biological Index (BIX), and Humification Index (HIX). It was evaluated a rainfall episode with 14.7 mm of accumulated precipitation that increase the flow 1.9 m³/s to 4.5 m³/s. DOC average concentration was 5.5 ± 4.1 mg/L. Sample 4 had the biggest DOC value (16.77 mg/L). Fluorescence peaks showed refractory compounds (peak A) in the begging of the event, followed by peak T_2 in the rising limb, and until the end, this signal was decreasing remained just peak A in evidence. Those characteristics can be, respectively, associating to first rainfall wash-off, external input with labile characteristics and dilution effects. FI classified first effect as a mixed of refractory and labile compounds. BIX and HIX corroborate among them, suggesting allochthonous endogenous contribution, as expected in diffuse pollution conditions. It can be concluded that rainfall episodes contributes with a mix of organic compounds into the river.

Key-words: Rainfall episodes. Diffuse Pollution. Organic Matter. Fluorescence.

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