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WATER POLLUTION STATUS OF SIRET RIVER IN PASCANI TOWN AREA DUE TO DIFFERENT DOMESTIC AND WASTEWATER TREATMENT ACTIVITIES (WINTER SEASON)

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Abstract

The paper discusses the pollution status in the case of an important NE Romanian watercourse (Siret River) in Pascani town area based on the analysis of some water quality indicators (pH, temperature, dissolved oxygen, organics (COD and BOD₅), conductivity, fixed residues, nitrogen-based nutrients (N-NH₄⁺, N-NO₃⁻, N-NO₂⁻), phosphates, total phosphorus (P), total calcium (Ca²⁺), magnesium (Mg²⁺), iron (Fe²⁺, Fe³⁺), turbidity and suspended solids content) measured at three local strategic control sections, in the winter season (January-February) of 2013 and 2014. The final results classify the water quality of the Siret River in Pascani town area as "medium" to "good" (i.e. calculated standard water quality indices – *WQI*, varying between 63.20 to 72.62 in 2013, and between 53.92 to 76.54 in 2014). The evaluation score (*ES*) for water quality corresponded to values between 6.28 to 6.57 in 2013, and 5.69 to 6.88 in 2014. The real pollution status of the Siret River is estimated by the global pollution index (*I*_{GP}*), giving values in the range of 2.32 - 2.53 (2013), or 2.11 - 3.09 (2014), which indicate "an aquatic environment modified by domestic and urban wastewater treatment activities, generating discomfort effects for different life forms (especially, *daphnia*) or human health". It is recommended that continuous monitoring of the Siret River water quality to be undertaken, and the implementation of preventive control and remediation actions (periodic cleaning/sanitation services) in order to perform at least 'good' water quality until 2015 - 2018, at all strategic control sections. Overall, the water quality of the Siret River in Pascani town area was found as improving, and the standard European quality classification target of "good" was partially attained in some control sections in winter season of 2013 - 2014.

Key words: global pollution index, natural water pollution status, quality indicator, standard quality classification, Siret River, wastewater treatment plant

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