Water Quality Control and Treatment into Bahlui River – Iasi County Area

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Bahlui river is a permanent surface water nearly the industrial site of Iasi town and a residential area and has an average flow rate of 0.189 m/s, an average shape of 5.3 %, and an average annual flow of 2.16 m³/s into Iasi county area. In Bahlui river, most of the industries situated along the river discharge wastewaters into the surface water, under Romania legislation jurisdictions. So, it is considered that the surface water – Bahlui river, Iasi county area – is a contaminated water with various pollutants such as organic compounds, minerals and heavy metal ions [1]. The quality indicators permanently controlled were: pH, turbidity, suspended solids, COD, BOD₅, ammonia, total nitrogen, total phosphorus, nitrate, nitrite, sulphate, phenol index, extractable substances, chlorides, hardness, residues [2,3] and some heavy metal ions (e.g., Pb²⁺, Zn²⁺ and Cu²⁺). Because of the high concentrations of almost all quality indicators that exceed the Romanian maximum admissible concentration (MAC) [4] it is necessary to treat and clean the Bahlui river.

The laboratory scale-up study indicates a physicochemical treatment based on water coagulation and sedimentation with inorganic coagulants (feric sulphate and aluminium hydroxichlorosulphate – AHCS) into some indicated conditions. The best treatment degree (e.g., 94.65 % for colour, 95.1 % for turbidity, 44.50 % for organic matters expressed as COD) were performed with a dose of 50 mg/L AHCS and 0.75 mg/L Fe₂(SO₄)₃. Without feric sulphate the best treatment degree was performed for a dose of 75 mg/L AHCS.

The sediments from the Bahlui river – Iasi area must be removed, chemical treat and after valorized or use as soil together with the existing soil into the vicinity of Iasi town.

References
[4]. Zaharia C., Juridical protection of the environment, ECOZONE Ed., Iași, 2005