

Critical Analysis of the Danube River Water Quality in Tulcea (Romania) as Part of the Sustainable Development Evaluation of the Region

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Abstract: The paper presents original studies concerning the levels of pollutants concentration in Danube River during the period of 2001-2006. There have been taken samples of Danube River water from different locations from the surrounding area of the city of Tulcea (Romania). In September 2002 the pH was 2.92, which is a very dangerous value, significantly affecting the fauna (the fish die when the pH gets to 4.5). The minimum registered values for the dissolved oxygen range from 5.80 mg/L (2002) to 5.87 mg/L (2005). Very often the chemical oxygen demand exceeds the admitted value due to the high quantities of the total dissolved substances and suspensions evacuated into the natural receiver. The suspended solids exceed the admitted limits almost every month at the effluents discharged effluent, because of the factories around, which release a very high value of the suspended solids (up to 1340 mg/L). The highest concentration of the ammonia values have been registered in most of the months in 2001 and 2002 (up to 1128 mg/L). The nitrites register in all six years values smaller than the maximum admitted (0.06 mg/L). The maximum registered value for the nitrates was in December 2004 (11.45 mg/L). In the surface water, the total dissolved substances do not exceed the 500 mg/L, but it does at the evacuation water sometimes (April 2001 - 720.06 mg/L, November 2005 - 828 mg/L, in January 2006 - 930 mg/L, and in July 2006 - 1152 mg/L). The city of Tulcea does not have a filtering station, and the auto-filtering property of the river, which is based on physical, physical-chemical processes (dilution, sedimentation, solar radiations and chemical reactions) is not sufficient to neutralize the negative impact of all polluting agents evacuated in the Danube River.

Keywords: Danube River, water quality, auto-filtering, pollution, sustainable development.