ACTA ZOOLOGICA BULGARICA
Acta zool. bulg., 61 (2), 2009: 169-176

Structure and Functioning of Micro- and Metafauna in Activated Sludge from Waste Water Treatment Plant of Textile Manifacturing

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Abstract: The qualitative composition, quantitative parameters, structure and functioning of micro- and meta-fauna complexes – (Flagelata appochromata, Rhizopoda, single and colonial Ciliophora, Rotifera, etc.) of activated sludge originated from Waste Water Treatment Plant (WWTP) of a textile factory in West Bulgaria was investigated during a two years period of sampling – March 2002- May 2004. The facility receives exclusively industrial wastewater loaded by azo dyes. In the course of the study a total of 52 taxa of different levels from the investigated groups of organisms were obtained. Four sampling zones were investigated – accumulating basin, nitrification, and denitrification basins and secondary clarifier. The repeating shock loads with high concentrations of azo dyes have strongly negative impact on species richness and on density of micro- and meta-fauna complexes. All of the sampling series were dominated by Rhizopoda – *Arcella catinis* and *Euglipha filifera*, which are characterized by high flexibility to vast range of pollutants. The values of presented indices showed that the structure of the micro- and meta-fauna in WWTP is unstable. The technical scheme used in this WWTP is discussable relating to type of contaminants and the development of sustainable structure of activated sludge.

Key words: azo dyes, activated sludge, micro-fauna, metafauna, biobasins