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"Gheorghe Asachi" Technical University of Iasi, Romania

POLLUTION SOURCES IN WATER OF YOUNG RESERVOIRS - CASE OF ILARION HYDROELECTRIC DAM, GREECE

Elisavet Amanatidou[1*], Eleni Trikilidou[1], George Pekridis[1], George Samiotis[1], Lazaros Tsikritzis[1], Nikolaos Taousanidis[2], Stavros Karapanos[1]

[1]*Technological Education Institute of Western Macedonia, Environmental Chemistry and Waste Water Treatment Laboratory, Environmental Engineering Pollution Control Department, Koila, Kozani, 50100 Greece*
[2]*Technological Education Institute of Western Macedonia, Mechanical Engineering Department, Koila, Kozani, 50100 Greece*

Abstract

Evaluation of spatial/ temporal water quality data at reservoirs has shown differences after the dam construction as well as long-term changes of water chemistry. One of the most recent reservoirs created in Europe is Ilarion Reservoir in Western Macedonia – Greece (2012). In this work, the water physicochemical characteristics of this young reservoir and the spatiotemporal water quality variation of the feeding river and its main tributaries have been studied, and statistically interpreted. The aqueous system of the young reservoir after two years of formation does not seem to have reached its stabilization age but a stabilization tendency appears at some quality parameters. The dissolution of plant residues covering the flooded areas and the water volume changes affected the water quality, while excesses of legislation's limits for some parameters have been observed. The most affected parameters, remaining at high levels are TKN, ammonia, nitrite nitrogen and color. The feed water quality is generally within the legislation's limits with the exception of nitrite and ammonium nitrogen parameters which exceed the maximum permissible legislation's limits and are the main pollution sources of the young reservoir. Monitoring these parameters is necessary to determine if the observed excess values could lead to eutrophic conditions and toxic habitat for fishes. The statistical analysis indicated some significant parameters responsible for large variations in water quality and allowed the identification and apportionment of pollution sources as an aspect of the temporal/spatial variations in water quality, indispensable for effective water quality management.

Key words: young reservoir, statistical analysis, water quality

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[*]Author to whom all correspondence should be addressed: e-mail: eAmanatidou@teikoz.gr, Phone: +30 24610 68015; Fax:+302461039682