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## **PREDICTION OF THE CONCENTRATION OF POLLUTANTS WAVE IN AQUATIC ENVIRONMENT USING ROUGH SET THEORY**

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### **Abstract**

A possible prediction methodology for the concentration of pollutants wave in aquatic environment using Rough Set Theory is presented. The issue is of increasingly importance especially for early pollution risk warning. The hydro-morphologic complex characteristics of surface water bodies should be taken into account when pollution dispersion models are designed. However, when more characteristics/multi-criteria are taken into account, including pollutants physical-chemical ones and their environmental-media partition trends and interactions, the complexity of the dispersion models increases, making those models appropriate only for specific case studies. Through the proposed computation formalism, Rough Set Theory is able to eliminate the uncertainty introduced by any model parameters, being based on the experimental and expert observations assessment. It is able to deal also with the uncertainty introduced by the data of non-homogeneous quality (incomplete, redundant etc). For those reasons it became a reliable new instrument to be used in diagnosis and prediction. Despite the fact that Rough Set Theory users' community is present in different fields of activity for few decades, in the environmental field the theory is sparingly used. The new proposed methodology using Rough Set Theory shows the possibility to extend its applicability within the environmental field as an instrument able to characterize the relation: “pollution source - migration ways of pollutants - targets” and to manage the uncertainty in relation to the pollution evolution phenomena. Implemented with minimum computation requirements the methodology might be used as an economically and user friendly decision support.

*Key words:* assessment, methodology, multi-criteria

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