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THE (DOMINANCE BASED) ROUGH SET APPROACH APPLIED TO AIR POLLUTION IN A HIGH RISK RATE INDUSTRIAL AREA

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Abstract

This study presents a Rough Set Analysis (RSA) application, partially based on dominance in relation to air micro-pollution management in an industrial place with a high environmental risk rate, such as the industrial area of Siracusa, located in the South of Italy. This new data analysis instrument has been applied to different decisional problems in various fields with considerable success. Therefore, it is believed that it could also be used for the environmental issue related to multi-attribute sorting, considering both qualitative and quantitative attributes and criteria, such as sulphur oxides (SO_x), nitrogen oxides (NO_x), Methane (CH₄), non-methane hydrocarbons (NMCH) and some meteorological variables, such as air temperature and the relative humidity index. After outlining some basic concepts of the RSA theory, the most significant results obtained from the RSA specific application are presented and discussed particularly examples of decisional rules, attribute relevance and some other methodological features are offered to improve understanding and advantages of the approach.

The decisional rules obtained can also be usefully implemented in order to explain and manage the risk of air pollution.

Key words: air pollution, environmental criteria, industrial areas, rough sets

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