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APPLYING THE TOPSIS-F METHOD TO ASSESS AIR POLLUTION IN VILNIUS

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Abstract

These days many works analyse air pollution, sources of air pollution, the impact of air pollution on human health, and ways to reduce air pollution. Since air pollution is affected by a number of factors, this paper presents a multi-attribute decision-making approach to assess air pollution. The proposed approach comprises four steps: selecting the attributes for the assessment, applying the TOPSIS-F method (the Technique for Order of Preference by Similarity to Ideal Solution with fuzzy sets) in the assessment, measuring the selected attributes of air pollution in Vilnius, Lithuania, and evaluating air pollution levels. The TOPSIS-F method was applied to assess, from the above perspective, ten areas in Vilnius, outside several houses in Antakalnio Street and Žirmūnų Street. The experiment shows that House 5(35) in Žirmūnų Street and House 8(28) in Antakalnio Street are exposed to the lowest levels of air pollution, compared to other selected houses. Air pollution greatly depends on the distance from a main road and the presence of a barrier.

Key words: air pollution, air quality, Lithuanian Hygiene Norms, MADM, multi-attribute assessment, TOPSIS, TOPSIS-F

Received: April, 2014; *Revised final:* September, 2014; *Accepted:* November, 2014