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MULTI-CRITERIA EVALUATION OF THE SUSTAINABILITY OF BRČKO HOSPITAL'S MEDICAL WASTE MANAGEMENT TREATMENT

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Abstract

The purpose of this research was to evaluate which medical waste treatment would benefit Brčko Hospital the most by using multi-criteria decision-making, combining extended sustainability criteria with technical criteria. Six medical waste treatments were observed using these criteria. The evaluation was conducted through expert group decision-making and linguistic evaluations. These evaluations were converted into fuzzy numbers and assessed using the IMF SWARA (Improved Fuzzy Stepwise Weight Assessment Ratio Analysis) and fuzzy WASPAS (Weighted Aggregated Sum Product Assessment) methods. The weights of the criteria were determined using the IMF SWARA method, revealing that the ecological criteria carried the greatest weight. Fuzzy WASPAS was employed to rank the treatments, and the results indicated that the microwave and autoclave treatments showed the best indicators. This conclusion was supported by validating the research findings using six additional fuzzy methods and conducting sensitivity analysis. According to the research conducted, it is necessary to first treat medical waste and then dispose of it in the prescribed manner to reduce the impact on the environment and the health of living beings.

Key words: autoclave, fuzzy methods, medical waste, medical waste treatments, microwave

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