

عنوان مقاله:

Sustainable medical waste management in high-demand healthcare environments

محل انتشار:

دوازدهمین کنفرانس بین المللی مهندسی صنایع، بهره وری و کیفیت (سال: 1402)

تعداد صفحات اصل مقاله: 13

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خلاصه مقاله:

The increase in medical and hospital waste production is a consequence of rising demand for medical services. A substantial increase in medical waste presents a dual challenge. The collecting and treatment system may struggle to manage the excess waste, potentially requiring the establishment of temporary treatment centers. Simultaneously, the rise in waste volume contributes to increased air, soil, and water pollution within the collecting system. This paper introduces a multi-objective mathematical model for medical waste management, addressing economic, environmental, and social sustainability pillars. It evaluates costs and environmental impact across diverse medical waste types and time periods to minimize damage from uncollected waste. Various locations, such as permanent and temporary hospitals, clinics, labs, residential areas, treatment centers, and landfills, are analyzed. Results demonstrate the efficacy of a three-objective model with weighted functions. This approach optimizes waste flow, installs new treatment centers, and establishes a balance between goals, enhancing medical waste management sustainably. The results indicate that increasing the amount of generated waste in waste production centers has the most significant impact on the quantity of uncollected waste and levels of water, soil, and air pollution. Changes in transportation and waste treatment costs have the most significant impact on the overall system cost

کلمات کلیدی:

Healthcare waste management, Sustainable logistics, Multi-objective optimization, Medical waste generation

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/2019658>

