

Optimization of municipal solid waste management in Port Said – Egypt

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Abstract

Optimization of solid waste management systems using operational research methodologies has not yet been applied in any Egyptian governorate. In this paper, a proposed model for a municipal solid waste management system in Port Said, Egypt is presented. It includes the use of the concept of collection stations, which have not yet been used in Egypt. Mixed integer programming is used to model the proposed system and its solution is performed using MPL software V4.2.

The results show that the best model would include 27 collection stations of 15-ton daily capacity and 2 collection stations of 10 ton daily capacity. Any transfer of waste between the collection station and the landfill should not occur. Moreover, the flow of the district waste should not be confined to the district collection stations. The cost of the objective function for this solution is 10,122 LE/day (equivalent to US\$1716). After further calculations, the profit generated by the proposed model is 49,655.8 LE/day (equivalent to US\$8418.23).

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