



Assessing the Solid Waste Management System in the Industrial State of Charmshahr & Salariyeh By Using AHP & TBL

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ABSTRACT

Nowadays, in the developing and under developing countries industries are developed rapidly. Gathering various industries in one place has significant advantages such as better management, establishing essential foundations with lower costs, controlling the environmental pollutions and creating more competitions. On the other hand, the disadvantaged are generating various wastes in the high volumes. Therefore, the quantity and the quality of the Charmshahr & Salariyeh industrial state are assessed. This state has more than 200 active factories which lead to generate more than 21 thousand tons per year. Hence, AHP technique with the application of TBL method is conducted to choose the most proper solid waste management system for the state. Moreover, the sensitive analysis is conducted too. At end, recycling with the final weight of 0,325 is selected as the most proper scenario and incineration stands at the second place with the weight of 0.243. However, composting and landfilling are chosen as the next strategies with the weights of 0.238 and 0.194, respectively.

KEYWORDS

Solid Waste Management, Industrial State, Sustainable Assessment, TBL, AHP.

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1- BRIEF INTRODUCTION

Nowadays, in the developing and under developing countries industries are developed rapidly. Gathering various industries in one place has significant advantages such as better management, establishing essential foundations with lower costs, controlling the environmental pollutions and creating more competitions. On the other hand, the disadvantaged are generating various wastes in the high volumes. Therefore, proper solid waste management is an important issue in the industrial states. There are various methods of solid waste disposal but selecting a compatible one for a certain condition is hard. Hence, AHP technique with the application of TBL method is a novel decision making method which is conducted to choose the most proper solid waste management system.

AHP technique which was initially introduced by Saaty, is able to select the best alternative due to various criteria [1]. This model is used in many recent environmental studies such as selecting waste management strategies for hospitals [2], municipal wastes [3], hazardous waste transportation [4]. Moreover, sustainable development is another noticeable issue which is seen in this study. Due to the Agenda 21 three impacts including environmental, economical and social impacts are needed to evaluate to gather [5], if the sustainable development wanted to be considered.

In this study, an industrial state of Charmshahr & Salariyeh is considered to study. Based on the ratio and the physical analysis of the generated waste various disposal methods are assessed due to the local criteria.

2- METHODOLOGY

First, the consistent disposal methods are presented such as landfilling, recycling, incineration and composting. Second, all the criteria which can affect the disposal method with accompany of the TBL model which is known as a sustainable development model due to the Agenda 21 are founded and at last the hierarchy structure of the model is obtained [5]. Third, according to the AHP methodology all the alternatives are compared to each other based on each criterion. And finally, the best scenario with the higher score is gained [1].

3- MAIN CONTRIBUTIONS

Charmshahr & Salariyeh industrial state is located near the Varamin city in Tehran province. It has more than 200 active factories which lead to generate more than 21 thousand tons per year. Moreover, more than 44 percent of the waste is founded as the hazardous waste. Due to the gathered data, local conditions and available technologies in the country four disposal methods are selected which compared based on the 18 chosen criteria. In addition, sensitive analysis is conducted to assess the insensitivity of each criterion.

4- SIMULATION RESULTS

At end, recycling with the final weight of 0,325 is selected as the most proper scenario and incineration stands at the second place with the weight of 0.243. However, composting and landfilling are chosen as the next strategies with the weights of 0.238 and 0.194, respectively.

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