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ENVIRONMENTAL IMPACT ASSESSMENT OF MUNICIPAL SOLID WASTE DISPOSAL SITE USING RAPID IMPACT ASSESSMENT MATRIX (RIAM) ANALYSIS IN MASHHAD CITY, IRAN

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Abstract

Municipal Solid Waste (MSW) disposal is currently one of the major environmental issues in big cities. Several tools and techniques have been developed for Environmental Impact Assessment (EIA) of MSW disposal options, including scoping, checklists, matrices, qualitative and quantitative models and decision-support systems. Rapid Impact Assessment Matrix (RIAM) is a partially new method which is particularly advantageous over others as it provides a transparent and permanent record of analysis process at the same time organizing the EIA procedure, which in turn considerably reduces the time taken in executing EIAs. Using this method, the EIA has been carried out on different MSW disposal options including present landfill, composting, recycling, sanitary landfill and incineration in Mashhad (northeast of Iran) and it has been found that the sanitary landfill is the best recommended option under the existing circumstances. The EIA results show that the most important negative impact of the landfill operation is leachate leakage through layers which can lead to groundwater pollution. To mitigate this effect, the Industrial Waste Evaluation Model (IWEM) of United States Environmental Protection Agency (USEPA) was used to assess the possible risks associated with different types of liners. The results show that the single liner is the best alternative among lining options which can provide protective conditions against leachate seepage in Mashhad's landfill.

Keywords: Environmental Impact Assessment (EIA), Mashhad, Rapid Impact Assessment Matrix (RIAM), Sanitary Landfill

Received: March, 2013; Revised final: March, 2014; Accepted: March, 2014

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