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DESIGN OF A COMBINATION OF COMPOST PLANT AND LANDFILL FOR MUNICIPAL SOLID WASTE MANAGEMENT OF GUWAHATI CITY

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ABSTRACT

With the increase in population and rapid socio-economic development, a tremendous increase in the municipal solid waste (MSW) is observed. It has become a pressing issue in India because there are only a few proper disposal systems for the MSW in many Indian cities. Therefore suitable disposal of these wastes is a big concern in the present time. In this paper the treatment and disposal of the MSW of Guwahati city is planned. The population of Guwahati city is estimated for the year of 2025 by arithmetic mean method and then the waste generation is calculated from it. From the data, a compost plant is designed for treatment of the city MSW and a landfill is also designed to dump the remaining waste after composting. For 2015, the total quantity of MSW is calculated as 781.79 tons/day, and the average generation rate of MSW has been calculated as 0.74 kg/capita/day taking waste generation growth rate as 1.41 percent per annum as given by World Bank. For composting, required numbers of aerobic windrows are found as 60 and for landfill, which is designed with cover and liner, plan dimensions found as 241 m × 482 m with extra 25 m land around the landfill to set infrastructure amenities.

KEYWORDS: Municipal Solid Waste, Compost Plant, Windrow, Landfill, Liner, Design