

عنوان مقاله:

Estimation of gas emission released from a municipal solid waste landfill site through a modeling approach: A case study, Sanandaj, Iran

محل انتشار:

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خلاصه مقاله:

Sanitary landfill is the common strategy for municipal solid waste management in developing countries. Anaerobic decomposition of disposed wastes in landfill under favorable conditions will lead to the landfill gas (LFG) emissions, considering as emerging air pollutants. The emission of greenhouse gases, including methane, resulting from municipal solid waste disposal and treatment processes are considered as the major source of anthropogenic global emissions. Assessment and prediction of the emission rate are important for planning, proper application of methane as an energy source and determining the contribution of various greenhouse gas emissions to global warming. The purpose of this study was to estimate the amount of gas emissions from Sanandaj sanitary landfill. The data about the quantity and quality of the landfill and waste production were collected based on existing standard methods. Using LandGEM software the landfill emissions were estimated with considering the 50% content of methane, the methane production rate constant of 0.045/year and gas production potential constant of 200 m³/ton. The results of this study showed that the maximum mass of emitted gas is at the next year after the site closure (2021). It was estimated that total mass of LFG, methane, carbon dioxide and non-methane organic compounds were 23,150, 6184, 16,970, and 266 tons/year, respectively. Effective management in controlling LFGs not only results in air pollution reduction, green energy application for sustainable development, but also can use the financial benefits of the clean development mechanism to Kyoto protocol achievement for developing countries.

کلمات کلیدی:

Municipal Solid Waste, Landfill Gases, Methane, LandGEM

