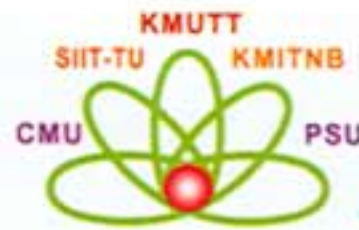


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Aim & Scope

The Asian Journal of Energy and Environment is an international journal published quarterly. The primary purpose of the journal is to provide a permanent record of achievements in various energy and environment aspects, including; policy management and technology. The scope of the journal coverage includes:

- **Energy** – Renewable energy, solar thermal applications biomass, wind energy, energy management and conservation in industrial process and building, energy planning and policy, energy standards, energy, energy consumption development, combustion, heat exchangers, cogeneration, rural energy, and other energy related topics.

- **Environment** – Bioenergy processes and utilisation, pollution prevention, wastewater treatment, marine and freshwater thermal pollution, landfill and radioactive wastes, greenhouse gases, environmental impact, organic and inorganic environment associated topics.

Comparison of Different Methods for Determining Methane Emission from Waste Disposal Sites in Thailand

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Abstract: This study is primarily focused on the estimation of total methane emission potential from waste disposal sites in Thailand. The results from two estimation methods, i.e. default method proposed by the Intergovernmental Panel on Climate Change (IPCC) and Landfill Gas Emission Model (LandGEM) proposed by United States Environmental Protection Agency (EPA), are compared with the measurement result obtained from actual waste disposal sites. From the information of waste

generation rate and total disposed waste amounts at 142 waste disposal sites in Thailand, total methane emission potential from these waste sources was estimated to be 138.9 Gg/year by IPCC method, considerably higher than 94.7 Gg/year predicted by LandGEM of the EPA. Meanwhile, actual measurement from representative landfill and open dumpsites by close flux chamber technique gave an average methane emission rate of 23.95 and 1.98 g/m².d respectively during the dry season. The emission rate was found to vary widely as a result of the variations in local climatic conditions, waste characteristics, waste disposal methods, the presence of cover soil and gas migration in the waste disposal site. Total emissions from all waste disposal sites was then estimated based on these average values estimated to be 64.3 Gg/year.

Keywords: Close flux chamber, first order model, IPCC, Land GEM, methane emission.

Introduction

Urbanization and the continuous increase of the urban population yields increasing amount of waste to be disposed. Before 1990's, most of the wastes collected from urban areas in Thailand were dumped in open areas resulting in unsanitary and nuisance conditions that affect the people living nearby the site. During the past decade, there is a gradual improvement of waste disposal practice from open dumping to sanitary landfill to cope with the increasing amount of waste, while minimizing