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REDUCING EMISSIONS OF GREENHOUSE GASES FROM MUNICIPAL LANDFILLS-BETWEEN THEORY AND REALITY. MITIGATION OF METHANE EMISSIONS

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Abstract

Methane landfill emissions are a general concern and should be estimated for taking the proper measures for global warming mitigation. The European legislation is supporting all techniques that avoid, reduce or treat CH₄ emissions. One of the main directions is reducing the quantities of biodegradable waste disposed in landfills. The efforts for GHG emissions reduction and also compliance with European legislation in the field of waste management does not mean only putting in place some state of the art facilities but also to operate them in optimal conditions at design capacity. The new projects for Integrated Waste Management Systems, developed in most Romania counties, include as compulsory stage in the design of the new landfills, a gas treatment system in accordance with Directive on the landfill of waste. By treatment of the landfill gas, the CH₄ is oxidized to CO₂ that has a global warming potential of 21 times less than CH₄. It is foreseen that these systems will be put into operation after closing the first cell that has variable life time, frequently between 6 and 8 years, meanwhile most of the generated methane will be released into the atmosphere. The legislation does not mention at what stage the landfill gas has to be collected and treated. In this way “after cell closure” could mean a significant delay in compliance. Various first kinetic order models of methane generation potential are briefly presented. They are widely used having advantages and drawbacks and could be used to predict the methane emission/generation before and after landfill closure.

Key words: biodegradable, landfill gas, model, Romania, waste

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