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INFLUENCE OF AMBIENCE TEMPERATURE AND OPERATIONAL-CONSTRUCTIVE PARAMETERS ON LANDFILL GAS GENERATION - CASE STUDY NOVI SAD

ABSTRACT

Researches in the area of landfill gas generation and energy utilization are widespread in the world for several reasons: reducing effects of global warming, utilizing alternative energy sources, reducing conventional energy consumption, and environmental protection. First part of this research is conducted to investigate the influence of meteorological parameters, primarily ambient temperature, on landfill gas generation processes at Novi Sad landfill. The second part of the research is devoted to the characteristics of landfill such as the waste age, closing practice, landfill body, as well as the waste depth and quantity of generated gas. From the results of investigation, it is concluded that methane generation varies significantly with ambient temperature and that seasonal variations have significant influence on methane generation. During winter, methane generation and migration periods are longer, due to higher temperatures, the process of methane generation is faster.

KEYWORDS

landfill gas generation, landfill, methane

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REFERENCES [view full list]

1. Brasseur, G. P., et al., European Scientific Assessment of Aircraft Emissions, *Atmospheric Environment*, 32 (1998), 1155-1165.
2. He, C., et al., A Catalytic/Sorption Hybrid Process for Landfill Gas Treatment, *Environmental Science and Technology*, 44 (2010), 1155-1161.

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- Engineering Chemistry Research, 36 (1997), 10, pp. 4100-4105
3. Dunfield, P., et al., Methane Production and Consumption in Soils: Response to Temperature and pH Soil, *Biology and Fertility of Soils*, 24 (1996), 3, pp. 321-326
 4. Fornes, L., Ott, C., Jager, J., Development of a Landfill Cover System for Methane Oxidation - Methane Oxidation in a Compost Layer, *Waste Management and Landfill Symposium*, Sardinia, Italy, 1997, pp. 108-111
 5. Hanson, R. S., Hanson, T. E., Methanotrophic Bacteria, *Microbiology Reviews*, 57 (1993), 4, pp. 439-471
 6. Higgins, I., et. al., Methane-Oxidizing Microorganisms, *Microbiology*, 140 (1994), 4, pp. 556-590
 7. Wise, M. G., Mc Arthur, J. V., Shimkets, L. J., *Methylosarcina* and *Methylosarcina Quisquiliarum* sp. nov., novel type 1 Methanotroph, *Journal of Systematic and Evolutionary Microbiology*, 51 (2003), 1, pp. 1-10
 8. Cheremisinoff, N. P., *Handbook of Solid Waste Management Technologies*, Elsevier Sciences, 2003
 9. Akesson, M., Nilsson, P., Material Dependence of Methane Emissions from Landfills, *Waste Management & Research*, 16 (1998), 2, pp. 108-111
 10. Mata-Alvarez, J., *Fundamentals of the Anaerobic Digestion of the Organic Fraction of Municipal Solid Wastes* (Ed. J. Mata-Alvarez), London, 2003, pp. 1-19
 11. Meres, M., et. al., Operational and Meteorological Influence on Methane Composition at the Barycz Landfill Site in Cracow, Poland, *Environmental Monitoring and Assessment*, 22 (2004), 3, pp. 195-201
 12. Christophersen, M., et al., Lateral Gas Transport in Soil Affecting Methane Governing Emissions and Methane Oxidation, *Waste Management & Research*, 24 (2006), 3, pp. 595-601
 13. Gebert, J., Groengroeft, A., Passive Landfill Gas Emission Measurements: Pressure and Implications for the Operation of Methane Oxidation Management, *Waste Management & Research*, 26 (2006), 3, pp. 245-251
 14. Lee, N., et. al., Pollutant Transformations in Landfill Layer, *Environmental Research*, 12 (1994), 1, pp. 33-48
 15. Czepiel, P. M., et. al., Landfill Methane Emission Measurement Using Tracer Methods, *Journal of Geophysical Research*, 101 (1996), 10, pp. 12001-12010
 16. Young, A., The Effect of Fluctuations in Atmospheric Pressure on Methane Composition, *Water, Air and Soil Pollution*, 64 (1992), 3-4, pp. 245-251
 17. Börjesson, G., Danielsson, A. S. A., Svensson, B. H., Methane Emissions from Landfill Determined by Geostatistical Treatment of Static Data, *Journal of Environmental Science and Technology*, 34 (2000), 18, pp. 1801-1806
 18. Klusman, R.W., Dick, C. J., Seasonal Variability in Methane Emissions from Landfills, *Environmental Science and Technology*, 34 (2000), 18, pp. 1807-1812