生态与农村环境学报
Journal of Ecology and Rural Environment

生态与农村环境学报 » 2014, Vol. 30 » Issue (1) :15-20 DOI:

矿化垃圾生物覆盖层减少垃圾填埋场CH_4、N_2O和CO_2释放的效应研究

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Effect of Aged Refuse Bio-cover Mitigating Emission of Greenhouse Gases (CH_4, N_2O and CO_2) From

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摘要 对利用矿化垃圾构建生物覆盖层以削减填埋场温室气体的释放问题进行了深入研究，分析了环境因素对CH_4释放的作用，考察了作盖层材料的矿化垃圾的厚度变化对CH_4氧化的影响。结果表明：温度为5~45 ℃时，矿化垃圾对CH_4的氧化速率平均值分别约为粘性土2.35和4.71倍，CH_4氧化速率随温度的升高而增加，并在35℃时达到最大值。当含水率 w为16%~24%时，纯矿化垃圾覆盖层、半矿盖层和沙性土覆盖层CH_4氧化能力均达到最大。砂性土覆盖层和半矿化垃圾覆盖层CH_4释放通量平均值分别为纯矿化垃圾覆盖层的329.（P<0.05）和91.7倍（P<0.05），添加矿化垃圾填料会增加覆盖层N_2O释放通量，纯矿化垃圾覆盖层N_2O（以N计）释放通量平均值矿化垃圾覆盖层和砂性土覆盖层的2.1倍（P<0.05）和3.5倍（P<0.05）。

关键词： 矿化垃圾 生物覆盖层 CH_4氧化能力 温室气体 效应

Abstract: The use of bio-cover composed of aged refuse to reduce emission of greenhouse gases (CH_4, N_2O an from landfills was studied in depth, analyzing roles of environmental factors in CH_4 emission and CH_4 oxidation re thickness of the aged refuse cover. Results show that when temperature varied in the range of 5-45℃, the mean oxidation rate of aged refuse was 2.35 times that of clayey soil and 4.71 times of that of sandy soil, and it increas rising temperature and peaked at 35℃. When moisture content in the cover layer was maintained in the range of 24%, all the three covers peaked in CH_4 oxidizing capacity. The mean CH_4 flux from the sandy soil cover and the s mineralized refuse cover was 329.8 and 91.7 times of that from the pure aged refuse cover, respectively. Additio refuse in the cover would increase the flux of N_2O oxidation. The mean flux of N_2O emission from the pure aged r cover was 2.1 times (P<0.05) and 3.5 times(P<0.05) of that from the semi-aged refuse cover and sandy soil cover respectively.

Keywords: aged refuse bio-cover methane oxidation rate greenhouse gas effect

Received 2013-04-17; published 2014-01-25

Fund:

国家自然科学基金(41005090,41375161);环保公益性行业科研专项(201109024)

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