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Microbial Methane Oxidation at Cover Soil Layer of Municipal Solid Waste Landfill in Japan

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ABSTRACT

Greenhouse gas emission from waste landfill had been gained public concern. Waste landfill is one of the large emission sources and

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..... These results revealed that the methane-oxidizing bacteria in the landfill cover will consume the oxygen that penetrated from surface and net efficiency of methane reduction must be reduced. (*less than 300 words*)

Keywords: methane oxidizing bacteria, greenhouse gas, mitigation, landfill cover soil
(*3-5 keywords should be appeared*)

INTRODUCTION

It has been well recognized that a waste landfill is major emission source (IPCC 2000).....

.....activity has been investigated. The relationship between these parameters was analyzed for understanding the mechanisms.

MATERIALS AND METHODS

Subjected landfill site

A waste landfill site where municipal solid waste had been disposed of for 25 years was selected for investigation. The details of the landfill was shown in Table 1.

Table 1 Details of landfill subjected in this study

	Waste type	duration	Capacity	Others
Landfill AM	MSW	1980-1995	750,000m ³	Mountain
Landfill AN	MSW	1988-2000	900,000m ³	plain

Microbial DNA extraction

Fifty grams of soil sample was suspended in 450 ml of distilled water for 30 minutes. Supernatant was applied to gene extraction kit

RESULTS AND DISCUSSION

Distribution of methane emission and oxidation in the landfill surface

Figure 1 shows the relationship between the methane emission from the surface of landfills and the methane oxidation

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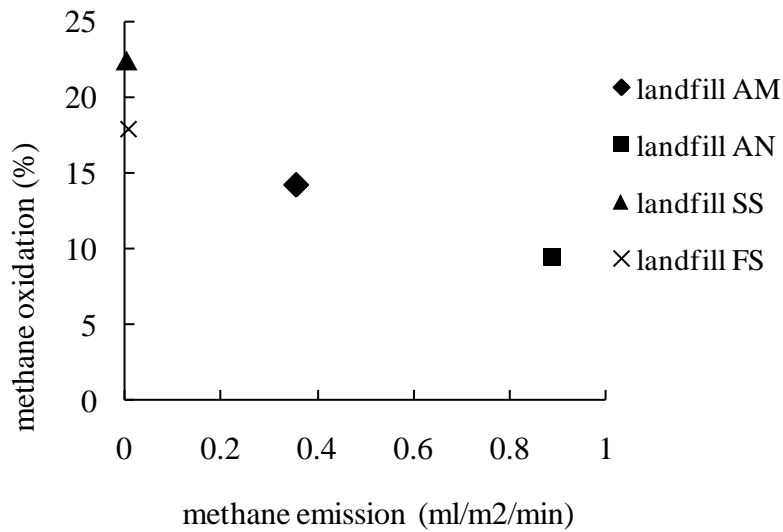


Figure 1 Relationship of methane emission and oxidation

Population of methane-oxidizing bacteria in the landfill cover soil

Population of methane-oxidizing bacteria in the landfill surface is shown in Table 2. Relationship between the population and methane emission was also shown in

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CONCLUSION

This study aimed to propose a practical methodology for estimating the methane oxidation behavior of waste landfills. Precise prediction of methane emission must be achieved by investigating the historical trends of disposal of the organic.....

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In this sense, we should continue to establish area-, region-, or at least country-specific activity and kinetic parameters on methane oxidation in landfills beyond the case study.

ACKNOWLEDGEMENT

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