Short Communication

Effect of air flowrate on the dynamic respiration activity of the raw organic fraction of municipal solid wastes

Alexandros Evangelou, Vassilios Chintzios, Dimitrios Komilis, Antoni Sànchez

PII: S0960-8524(16)31630-3
DOI: http://dx.doi.org/10.1016/j.biortech.2016.11.109
Reference: BITE 17355

To appear in: *Bioresource Technology*

Received Date: 24 October 2016
Revised Date: 24 November 2016
Accepted Date: 27 November 2016

Please cite this article as: Evangelou, A., Chintzios, V., Komilis, D., Sànchez, A., Effect of air flowrate on the dynamic respiration activity of the raw organic fraction of municipal solid wastes, *Bioresource Technology* (2016), doi: http://dx.doi.org/10.1016/j.biortech.2016.11.109

Effect of air flowrate on the dynamic respiration activity of the raw organic fraction of municipal solid wastes

Alexandros Evangelou[1], Vassilios Chintzios[1], Dimitrios Komilis[1,2*], Antoni Sànchez[2]

[1] Laboratory of Solid and Hazardous Waste Management, Department of Environmental Engineering, Democritus University of Thrace, Xanthi, 671 32, Greece.

[2] Composting Research Group, Department of Chemical, Biological and Environmental Engineering, Universitat Autònoma de Barcelona, 08193 Bellaterra, Barcelona, Spain

[*]corresponding author, tel: +30-2541079391, email: dkomilis@env.duth.gr

Abstract

Scope of this work was to study the effect of the aeration rate on the respiration activity of the fresh organic fraction of MSW and to compare the resulting dynamic respiration indices with those of MSW derived compost. Thus, a categorization of the dynamic respiration activity of MSW throughout a composting facility is provided. A simulated organic fraction of MSW was used as a substrate and four experimental runs were performed to achieve unit airflow rates (UAF) from around 6 to 30 L air kg^{-1} VS h^{-1}. Six dynamic respiration activity indices were calculated and compared to the corresponding indices of stable MSW compost from a previous work. Findings indicate that the increase of the UAF results in a corresponding increase of the dynamic stability indices. Dynamic respiration activity indices above 1500 and below 520 mg O_2 kg^{-1} VS h^{-1} indicate fresh and very stable MSW materials, respectively.

Keywords: composting; dynamic respiration index; microbial respiration activity; organic fraction MSW; stability.