

# International E-Conference on Waste Management and Recycling

December 02-03, 2021

**\*Title: Influence of wetting procedure on the compressibility of the bioreactor landfill**  
Nikola Kaniski<sup>1</sup>, Igor Petrovic<sup>1</sup>, Nikola Hrcic<sup>1</sup>, Dino Bosilj<sup>1</sup>

<sup>1</sup>University of Zagreb/ Faculty of Geotechnical Engineering, Varazdin, Croatia

**\*Abstract:**

From a civil engineering point of view, bioreactor landfills can be seen as artificial embankments with so-called methanogenic fraction as the main construction block. Methanogenic fraction contains high amount of organic matter and as such it is suitable for landfilling into the bioreactor landfill. The material is landfilled in the dry state. However, after the landfill closure the wetting procedure of the landfill body is initiated with aim to enhance microbiological activities and to extract biogas. Due to wetting, unit weight of the landfill body will be increased, while the vertical effective stresses will be reduced. Consequently, additional settlements of the landfilled material can be anticipated. This paper focuses on the above mentioned consideration through numerical modelling simulations using GeoStudio software. Input parameters used within numerical models were obtained from series of oedometer tests. In order to define the initial stage, the dry state of the landfilled material is considered in the first step. In the second step the infiltration of leachate into the landfill body is taken into account. Comparison of results obtained in the first and second step reveals that the wetting of the landfill body in the after closure period will cause a significant amount of additional settlements.

**Acknowledgments:**

The financial support of the Croatian science foundation for the project “Testing and modelling of mechanical behavior of biodryed waste as a Waste-to-Energy prerequisite” (UIP-05-2017) is gratefully acknowledged.

**\*Biography:**

Nikola Kaniški, mag.ing.amb., born in Varaždin, Croatia. Completed his Master’s in Environmental Engineering in 2017 at the Faculty of Geotechnical Engineering. Spent one semester at the University of Leoben as part of Erasmus+ student exchange during his bachelor study. Currently employed as a Research Assistant on the project: “Testing and modelling of mechanical behavior of biodryed waste as a Waste-to-Energy prerequisite”. He is working on his PhD thesis at the same Faculty. Author of several technical and scientific papers in the subject of Environmental Engineering.



**Author details**

\*Full name: Nikola Kaniski

\*Email ID: [nikola.kaniski@gfv.unizg.hr](mailto:nikola.kaniski@gfv.unizg.hr)

\*Contact number: +385 42

\*Category of Participation: Oral

\*Category of Presentation: Speaker

Session Name: Waste Treatment