

## Microbial community in a biofilter treating odours from a valorization center for municipal solid waste treatment (MSW)

V. S. Bessa<sup>1</sup>, S.C. Moura<sup>1</sup>, I.I.R. Baptista<sup>2</sup>, R Ferreira Jorge<sup>2</sup> and P. M. L. Castro<sup>1</sup>

<sup>1</sup>CBQF/Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Rua Dr. António Bernardino de Almeida, 4200-072 Porto, Portugal.

<sup>2</sup>WeDoTech, Lda., Edifício CiDEB, Rua Dr. António Bernardino de Almeida s/n, 4200-072 Porto, Portugal.

Municipal solid waste treatment (MSW) stations with energetic valorization make use of the biogas produced by the digestion of organic matter to generate energy. However, complex odours associated with the MSW activities, like hydrogen sulfide (H<sub>2</sub>S), organic reduced sulfur compounds (e.g., CH<sub>3</sub>SH), and volatile organic compounds (VOCs) have to be controlled. The current work aims to manage these compounds using biological air treatment systems, such as biofilters. A biofilter filled with a mixture of wood-chips and compost was implemented at a MSW. Inocula from lab scale reactors treating organic compounds was used during the start up. The microbial communities present in this matrix, in the inoculum and in matrix after an acclimatization period was investigated. Colony forming units (CFU/g) ranged from 10<sup>8</sup> (matrix), 10<sup>6</sup> (inoculum) to 10<sup>8</sup> (after acclimatization) CFU/g. Microbial communities differed at each stage. After 16S rRNA analysis, 26 different isolates (26% being *Actinobacteria*) were identified from the initial matrix, 11 from the inoculum (46% being *Firmicutes*) and 29 from the matrix after the acclimatization period (38% being  $\gamma$ -*Proteobacteria*). Twenty seven of the recovered isolates were able to oxidize sulphur compounds in solid medium (Sulphur Oxidizing Medium), in continuous successive transfers. Of those, 37% belong to the  $\gamma$ -*Proteobacteria* phylum. Their capacity of growing in liquid medium is under evaluation.