

Cover Layer Evaluation in Soil Organic Matter of Mixing and Compressed Unsaturated

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Abstract : The uncontrolled emission of gases in urban residues' embankment located near urban areas is a social and environmental problem, common in Brazilian cities. Several environmental impacts in the local and global scope may be generated by atmospheric air contamination by the biogas resulted from the decomposition of solid urban materials. In Brazil, the cities of small size figure mostly with 90% of all cities, with the population smaller than 50,000 inhabitants, according to the 2011 IBGE' census, most of the landfill covering layer is composed of clayey, pure soil. The embankments undertaken with pure soil may reach up to 60% of retention of methane, for the other 40% it may be dispersed into the atmosphere. In face of this figures the oxidative covering layer is granted some space of study, envisaging to reduce this perceptual available in the atmosphere, releasing, in spite of methane, carbonic gas which is almost 20 times as less polluting than Methane. This paper exposes the results of studies on the characteristics of the soil used for the oxidative coverage layer of the experimental embankment of Solid Urban Residues (SUR), built in Muribeca-PE, Brazil, supported of the Group of Solid Residues (GSR), located at Federal University of Pernambuco, through laboratory vacuum experiments (determining the characteristics curve), granularity, and permeability, that in soil with saturation over 85% offers dramatic drops in the test of permeability to the air, by little increments of water, based in the existing Brazilian norm for this procedure. The suction was studied, as in the other tests, from the division of prospection of an oxidative coverage layer of 60cm, in the upper half (0.1 m to 0.3 m) and lower half (0.4 m to 0.6 m). Therefore, the consequences to be presented from the lixiviation of the fine materials after 5 years of finalization of the embankment, what made its permeability increase. Concerning its humidity, it is most retained in the upper part, that comprises the compound, with a difference in the order of 8 percent the superior half to inferior half, retaining the least suction from the surface. These results reveal the efficiency of the oxidative coverage layer in retaining the rain water, it has a lower cost when compared to the other types of layer, offering larger availability of this layer as an alternative for a solution for the appropriate disposal of residues.

Keywords : oxidative coverage layer, permeability, suction, saturation

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