QUALIFICATION OF POTENTIAL TOXIC GAS FROM BIODIGESTERS

QUALIFICAÇÃO DO POTENCIAL TÓXICO DOS GASES DE BIODIGESTORES

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The aim of the present study was to qualify the biogas produced from poultry litter, cattle manure and swine manure, without the use of inoculants in prototype batch digesters. Each substrate had 5 replications (1 to 5) were randomly assigned to over 60 days were measured by detection equipment called portable gas Gas Alert ®. The biodigest measurements from B2 and S3 showed potentially toxic data on H2S (sulphuric acid) gas, with averages of 7.39 and 12.96 ppm. CO (carbon oxide) was high in poultry litter residue but very low at bovine and swine manure. CH_4 (methane) was high in bovine and swine manure (Figure 1). No significant differences were found on replications at 0.5% significance on Tukey Test. Such results show the need to control and use gases as energy source or to another purpose, otherwise the biodigesting process can be harmful to human health. The Gas Alert equipment proved to be almost indispensable for routine use in studies which demands gas measurements and it was very useful in this biodigesting experiment, to forewarn toxic gas production in the system. The experiment also gagged methane gas production, as a legal determination for greenhouse gases monitoring during swine and poultry litter digesting, in order to use its gas as energy source and with it, minimizes the cost of its activity, as well as the sustainable benefits for environment.

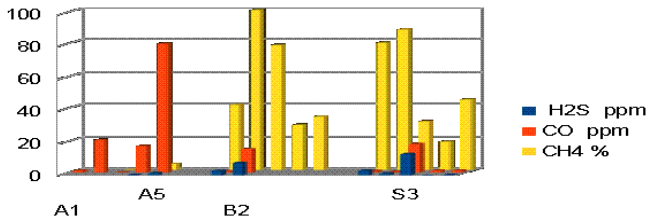

Figure 1. Average from gas measurements - H2S, CO and CH4 in A1 to A5 – poultry litter; B1 to B5- bovine manure ; S1 to S5 - swine manure.

Keywords: biodigestion systems, biogas, Gas Alert.