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## The Impact of the Bisubstituted Aromatics Functional Groups on the Inhibition of Methane Biosynthesis (Biogas)

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### ABSTRACT

Inhibitory compounds are often found to be the leading cause of anaerobic reactor upset and failure since they are present in substantial concentration in wastewaters and organic solid wastes. Among these inhibitory compounds, organic compounds are mentioned and more especially aromatic compounds. The purpose of this work was to evaluate the effect of bisubstituted aromatics functional groups on the methanogenic inhibition. The toxicity to acetoclastic methanogenic bacteria has performed in serum flasks, utilizing digested pig manure as inoculums, by measuring cumulative methane production. The results obtained indicate that some general relationships exist between the bisubstituted aromatic structures and their inhibitory effects on methanogenic bacteria. This demonstrates sufficiently that the grafting of hydrophobic or hydrophilic substituent on the benzene or monofunctional aromatic compound, make the obtained compound more or less toxic as the case and that in the same order of toxicity. A significant correlation was obtained indicating that the partitioning of bisubstituted aromatics into lipophilic membranes in bacteria may have a role in the inhibition of methane biosynthesis.

### KEYWORDS

Anaerobic Digestion; Methane; Inhibition; Bisubstituted Aromatic; Biosynthesis; Digested Pig Manure

### Cite this paper

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