

Experimental Investigation on Biogas Recovery and Treatment of Leachate

V.Yamini ¹, S.Samson², D.G.S.Nivedha³, M.Sridhar⁴

^{1,3,4},Assistant Professor, ²Professor, Department of Civil Engineering, Vel Tech Rangarajan
Dr.Sagunthala R&D Institute of Science and Technology

¹ yaminibanu2010@gmail.com, samsonduke66@gmail.com ², nive.jas92@gmail.com ³,
⁴sridharucet@gmail.com

ABSTRACT

The major issue in municipal cities is solid waste generation. The Landfilling is one of the techniques for disposal. Though there are advantages in disposing the waste, it also creates some long term effects to the surroundings such as Leachate, unwanted gas emissions etc. In this project, we made a solution to the problem. The unwanted gas containing 70 to 80% of Methane is collected by Biogas digestion process. We experimentally made a small budget bio digester by using waste material and equate a relation of how much gas can be collected at a certain range of wastes. Another important issue called Leachate, which pollutes the groundwater in great level, especially nitrates in higher amounts can cause “**Blue baby syndrome**”. This can be treated by efficient method called solar photo-catalytic process, comes under the Advanced Oxidation Process (AOP) and Denitrification process. The experiment was carried out with different concentrations of TiO₂ salts which are in dosage of 1,1.5,1.8,2g/500ml.The Photocatalytic experiment was conducted under 5hrs for each sample collected. Finally, at certain values of obtained BOD, COD, Nitrates, Dissolved solids, Phosphates, Iron, Chlorides, Turbidity etc. found, the removal efficiency results are discussed and tabulated.

Keywords: *Biogas digester, Leachate, Solar-Photocatalysis, Advanced Oxidation, Denitrification, TiO₂.*