

REMOVAL OF HYDROGEN SULFIDE (H₂S) BY ADSORPTION WITH NANOPARTICLES OF BIOGAS IN DAIRY FARMS

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Abstract: Nowadays, the development and utilization of clean energy is a world priority. One of these energies is known as biogas and it's possible to generate electrical energy. The biogas is a result of decomposition of organic residuals such as cattle manure. Its usage results in advantages for the environment, such as reduction of residuals and methane emissions, and also presents some economic advantages. However, the biogas has some corrosive components such as hydrogen sulfide (H₂S) that confuses its use as fuel in moto generators; for this reason, the H₂S must to be removed. The objective of this study was to evaluate the performance removal of H₂S with nanoparticulated iron oxides. This nanomaterial presents the advantage of having large superficial area as well as high porosity; and in consequence, it was hypothesized that will improve the removal of H₂S. The rupture curves were obtained for a fixed bed of ferrites nanoparticles, by monitoring the concentration of H₂S at the exit of the system. The flow of synthetic biogas ($4.1 \times 10^{-6} \text{ m}^3 \text{ s}^{-1}$) was kept constant, with a molar concentration of 2,000 ppm y 204 kPa absolute. To analyze rupture curves, the LUB method (Unsed Length Bed) was employed. It is concluded that the nanoparticles may help in reducing the levels of H₂S; hence, the energy obtained with the cattle manure may be cleaner.

Key Words: Biogas, hydrogen sulfide, adsorption, nanoferrites

Acknowledgments: This study was financially supported by the National Institute for Research in Forestry, Agriculture and Animal Production in Mexico (INIFAP-Mexico).