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The Use of Gas Chromatography for Biogas Analysis AMANDA ANDERSEN, Kettering University, JOHN SEELEY, Oakland University, JENNIFER AURANDT, Kettering University — Energy from natural gas accounts for 24 percent of energy consumed in the US. Natural gas is a robust form of energy which is rich in methane content and is low in impurities. This quality suggests that it is a very clean and safe gas; it can be used in providing heat, a source for cooking, and in powering vehicles. The downside is that it is a non-renewable resource. On the contrary, methane rich gas that is produced by the breakdown of organic material in an anaerobic environment, called biogas, is a renewable energy source. This research focuses on the gas analysis portion of the creation of the anaerobic digestion and verification laboratory where content and forensic analysis of biogas is performed. Gas Chromatography is implemented as the optimal analytical tool for quantifying the components of the biogas including methane, carbon dioxide, hydrogen sulfide and siloxanes. In addition, the problems associated with the undesirable components are discussed. Anaerobic digestion of primary sludge has consistently produced about 55 percent methane; future goals of this research include studying different substrates to increase the methane yield and decrease levels of impurities in the gas.

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