



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Maria R. McKinney	Project Number J0514
Project Title Comparing Biogas Yield from Anaerobic Digestion	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this project was to determine which type of food (chocolate candy or oats) would produce more biogas when anaerobically digested.</p> <p>Methods/Materials The manure containing the microorganisms was put into a Gatorade bottle with 400 ml of food waste. The microorganisms consume the volatile solids and produce biogas which builds up pressure and displaced the water in the second vessel into the third vessel which is graduated to that you can measure the amount of gas.</p> <p>Results My results showed that the chocolate candy produced more gas than the oats. The end results were 1600 ml of gas production for the chocolate candy and 180 ml of gas production for the oats. The range was 1420 ml of gas, which clearly showed that sugar-based food are better to use when anaerobically digesting.</p> <p>Conclusions/Discussion Microorganisms consume volatile solids and produce biogas. Volatile solid content varies between wastes and can come from sugars, fats or proteins. Sugars and fats have higher gas yield than protein or carbohydrates. This explains why the sugar-based mix produced more biogas than the carbohydrate-based mix.</p>	
Summary Statement My project was to determine which type of food waste (chocolate candy or oats) produced more biogas when anaerobically digested.	
Help Received Father helped order some supplies. Mother helped glue the display board together.	