



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Bryce C. Caputo	Project Number J0801
Project Title What Goes Around Comes Around: Turning Trash into Fuel	
Abstract Objectives/Goals The objective was to determine if an average family can support its home's fuel needs for a week by converting a week's worth of organic garbage into alcohol fuel. Methods/Materials A fraction of a family's organic garbage output was mashed and fermented in a warm environment for 7 days. A homemade still, built from a pressure cooker, 10 feet of copper tubing, a coffee can, and a small bowl, distilled the newly formed alcohol out of the fermented organic trash. The amount of alcohol fuel was measured and used to calculate if the average family could support their energy needs using this method. Results After fermentation, the mashed organic garbage contained 10 percent alcohol. Using the still, the mash was distilled to 1200 ml of 27 percent alcohol. This was distilled again for 933 ml of 39 percent alcohol, and once more for a final 532 ml of 50 percent alcohol fuel. Conclusions/Discussion Using statistics from the California Energy Commission's pamphlet "ABC's to AFV's", the experimenter compared the average family's organic garbage output and the average household's fuel requirements to the results of the experiment. Calculations showed that the fuel produced from an average family's week's worth of organic garbage could power the average family's household for 8 days.	
Summary Statement To recycle organic trash into alcohol fuel at a home-based level in order to meet the average household's energy requirements.	
Help Received Teacher helped finalize permits; father helped build still; mother bought materials	