



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Brian M. Messner	Project Number J1923
Project Title The Limits of Going Green: Cold Weather Effects on Biodiesel	
Abstract Objectives/Goals My project was to find which common blend of biodiesel (which is blended with #2 diesel) will perform best in cold conditions. I was also trying to find which one of them gelled or thickened the least. This is a major problem with biodiesel in cold weather. Methods/Materials I used a freezer set to 0 degrees, a refrigerator set to 35 degrees, 18 samples of biodiesel blends, fuel line tubes, a ruler, a stopwatch, wood, red pen, pencil, liquid measuring tube, 5 gallons of biodiesel, 3 gallons of #2 diesel, and a temperature gun. Results My results were that of the 5 variables, the 5% bio/95% #2 diesel blend performed best. Next was the 10% bio, 20% bio, 50% bio, and last, the 100% bio blend. My control, a 100% #2 diesel sample performed best over all. A cool part of all this was that at 0 degrees, neither the 50% or 100% bio samples even came out of the glass test jar because they were so gelled. The 20% bio sample thickened a little bit, but still flowed okay. All the rest flowed fine. Conclusions/Discussion I found that in 0 degree conditions, it isn't wise to use a blend above 20% bio because most likely, any other higher blend will get to gelled, such as the 50% and 100% bio samples did in my tests. But this only applies for cold areas.	
Summary Statement I did this project to find which common blend of biodiesel would perform best in cold conditions.	
Help Received My mom helped me assemble display board. My dad helped assemble test rig.	