CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)
Noah H. Cudd

Project Number
J0702

Project Title
The Greenhouse Effect

Abstract

Objectives/Goals
My objective is to determine the effect of different gases on the greenhouse effect.

I am doing this project because of the strong interest in the effect of gases like CO(2) and CH(4) on global temperature.

Methods/Materials
Materials:
1. Infrared test cell made up of PVC pipe containing a black-body absorber/radiator and closed off with polyethylene film. (Polyethylene was chosen because it is relatively transparent to IR.)
2. IR source (heat lamp)
3. thermocouple for measuring temperature
4. CO(2) gas
5. Air

Procedure:
Purge test cell with air.
Shine IR source into the cell for a fixed amount of time
Measure temperature rise over time
Purge test cell with CO(2)
Shine IR source into the cell for the same amount of time
Measure temperature rise over time

Results
The temperature rise in the cell when filled with CO(2) was slightly higher than when the test cell was filled with air.

Conclusions/Discussion
After many test runs I determined that there is a greater temperature rise when the test cell is filled with CO(2). That supports the hypothesis that CO(2) enhances the greenhouse effect. On the other hand, the additional temperature rise in a 100% CO(2) atmosphere is not substantially greater than with ordinary air so it is entirely possible that small increases in CO(2) might have only a small effect on temperature rise in the Earth's atmosphere.

Summary Statement
My project is to determine the effect of greenhouse gasses, specifically CO2, on temperature rise in a closed environment.

Help Received
My science teacher helped me to build my test cell. My stepdad helped me get materials like the tank of CO2.