



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Eric R. Dilley	Project Number S1412
Project Title Pollution and the Heart	
Abstract Objectives/Goals The objective is to determine how carbon dioxide pollution affects the heart, specifically exercise heart rates, resting heart rates, and blood pressure. Methods/Materials Seven people were tested, two in their forties and five the age of seventeen. The seventeen year olds varied in physical shape and weight (three were athletes from different sports). These seven people had their resting heart rate and blood pressure taken before exercise and then exercised till they reached that range. Once there, the gas mask was placed over their face for 2:30 minutes. The subjects were then allowed to rest for five minutes before their resting heart rate and blood pressures were taken again. An ECG was used during the experiment to find the heart rates of the test subjects. Results All seven of the subjects exercise heart rates went up by a range of 2-16 beats per minute. Also the resting heart rates went up significantly as well by 10+ beats per minute. The blood pressure measurements had no significant changes or patterns, but for the most part they were relatively similar before and after. Conclusions/Discussion The experiment produced results that showed carbon dioxide raised the heart rates of the test subjects. Carbon dioxide is known to raise heart rates especially during exercise but the experiment exposed that it also affects the resting heart rates of human beings even more dramatically. This is interesting because it takes approximately one minute for blood to flow from the heart, through the body, and back. It would seem that the carbon dioxide would be rid of after five minutes, but as my experiment exposes, it leaves a lasting effect.	
Summary Statement The affect of carbon dioxide pollution on the human heart.	
Help Received Borrowed ECG from Dr. Richmond; Borrowed digital blood pressure moniter from a neighbor.	