



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Victor B. Blanc	Project Number J0903
Project Title Trees Are a Gas	
Objectives/Goals My project was to determine if car exhaust would have a detrimental effect on seedling Douglas Fir trees. I believe that trees exposed to high concentrations of exhaust will show ill effects.	
Abstract I constructed fifteen mini-greenhouses, which I called enviro-tents. The enviro-tents were designed to house one Douglas Fir seedling and contain test gases around each tree. I tested three gases. 1. Air - to test if the tents themselves affected the trees. 2. Nitrogen - to test if the tents were capable of keeping the gases contained around the trees. 3. Car exhaust - to test the effects of automobile pollution on the trees. The fifteen trees were divided into three groups and each group was exposed to one gas. The gas in each tent was replaced every 48 hours for 28 days. During each changing of the gas, the trees were watered and observations were made. At the end of the experiment a close examination of each tree was made.	
Methods/Materials I constructed fifteen mini-greenhouses, which I called enviro-tents. The enviro-tents were designed to house one Douglas Fir seedling and contain test gases around each tree. I tested three gases. 1. Air - to test if the tents themselves affected the trees. 2. Nitrogen - to test if the tents were capable of keeping the gases contained around the trees. 3. Car exhaust - to test the effects of automobile pollution on the trees. The fifteen trees were divided into three groups and each group was exposed to one gas. The gas in each tent was replaced every 48 hours for 28 days. During each changing of the gas, the trees were watered and observations were made. At the end of the experiment a close examination of each tree was made.	
Results The group of trees tested in the air atmosphere showed no ill effects from being in the enviro-tents. This showed that any changes in the trees tested in the other gases would not be caused by the enviro-tents but by the gases in the tents. The group of trees tested in the nitrogen atmosphere, with no CO(2) to use for photosynthesis, showed deterioration. This demonstrated that the enviro-tents successfully contained each test gas around the trees. The group of trees exposed to very high concentrations of car exhaust showed no ill effects.	
Conclusions/Discussion I wanted to see the effects of car exhaust on trees and thought that its presence in high concentration would interrupt the photosynthesis process or otherwise damage the seedlings. However, in my experiment there was no significant effect to the trees placed in the car exhaust atmospheres. My results raise several questions. Is there enough available CO(2) in car exhaust for plants to sustain photosynthesis? Can plants process CO in place of CO(2)? Would car exhaust damage the trees over a longer period of time?	
Summary Statement My project was to investigate the effect of car exhaust on the health of seedling Douglas Fir trees.	
Help Received My father helped me build the enviro-tents. My mother helped me with some typing and editing. I used the Dragon Speaking typing program for my notebook as writing by hand is very difficult for me. This program is an accommodation I am allowed to use at my school.	