



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Emily P. Imfeld	Project Number J1717
Project Title Investigating If Different Levels of UV Light Blockage in Glass Affect the Amount of Airborne Bacteria in Your House	
Objectives/Goals Hypotheses-Clear glass will have the least amount of airborne bacteria. It has the lowest amount of UV light blockage, lets the most UV light in and kills the bacteria. Laminated glass will have the most airborne bacteria because it blocks the most amount of the UV light from the sun.	
Abstract	
Methods/Materials Materials*75 Nutrient Agar Petri dishes*Five 24x36inch wooden raisin trays*10 paper tray liners*50Tbsp of spoiled persimmon*50Cups of fresh potting soil*Five 32x40inch dual pane windows-one for each glass type*Commercial hot house*Fan*1x1 cm grid*Camera Procedure 1.Put a 24x36inch raisin paper on top of 24x36inch wooden tray 2.Spread 10 Cups of top soil on raisin paper ½ inch thick. 3.(1)Tbsp of spoiled persimmon in 5 evenly spaced spots on top of soil 4.Cover w/glass type & set in sun for 12 days 5.Remove glass from tray 6.Put plastic sectioned container on soil 7.Put Petri-dish over container opening and let sit for 10 min 8.Remove and seal Petri-dish 9.Put sealed Petri-dish in dark warm area for 72 hrs then measure bacteria growth 10.Repeat Steps 1-9 for each glass type 11.Bleach, seal and dispose of Petri-dishes in hazardous waste receptacle	
Results I found that my hypotheses were incorrect. The Triple Layer Silver Low-E glass preformed best and averaged 13.67 colonies/Petri Dish. The reflective properties of the Silver Layer in the glass deterred more UV light than any other glass types. The Double Layer Silver Low-E glass performed 2nd best and averaged 14.27 colonies/Petri Dish. It had one less layer of silver than the best performing glass and again the reflective properties of the Silver Layer in the glass helped prevent more UV light from penetrating than any of the lesser performing glass types. The 3rd and 4th best performing glass types were the Laminated which averaged 21.60 colonies/Petri Dish and the Dual Pane Clear averaged 23.07 colonies/Petri Dish. The glass type that let the most air borne bacteria growth was the Single Pane Clear glass that averaged 39.87 colonies/Petri Dish.	
Conclusions/Discussion I would suggest Triple or Double Layer Silver Low-E glass as the best window glass type for homes to reduce airborne bacteria. I found that visible light may help bacteria growth more willingly than UV light reduces the growth of the bacteria. My bacteria growth results were very similar to the visible light transmission of each glass type. This is what may have caused the results.	
Summary Statement My project is investigating if homes with energy efficient windows have more bacteria growth then homes with out energy efficient windows.	
Help Received Mom & Dad help proof read report. Dad help move the heavy windows and made sure I was safe when handling the bacteria.	