



**CALIFORNIA STATE SCIENCE FAIR  
2006 PROJECT SUMMARY**

<b>Name(s)</b> Avery C. Hunker	<b>Project Number</b> <b>J1115</b>
<b>Project Title</b> <b>The Heat Is On: Flammability Comparison of Residential Siding Materials</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Last summer, a wildfire burned towards my neighborhood. We were given orders to evacuate. Luckily, the fire was brought under control, but it made me wonder about the old cedar shingles that cover the front of my house. I designed an experiment to test the flammability of several common residential siding materials: cedar shingles, both old and new; pine siding, composite siding, and stucco siding. Based on my research, I hypothesized stucco and composite siding would be the least flammable siding materials, and pine siding would be the most flammable.</p> <p><b>Methods/Materials</b> I obtained test materials from my home, construction sites, and Home Depot. Using a saw, I cut the siding materials into squares. I traced each square on graph paper. I made a box from fire-rated gypsum board. I nailed each test sample to the gypsum board similar to the way the siding would be nailed to a home. I exposed each test square to a flame for 30 seconds using a propane torch.</p> <p><b>Results</b> All of the samples except the stucco, ignited when exposed to a flame. The stucco glowed red-hot, and the paint scorched, but the stucco never caught fire. I traced the burned areas and calculated the percent that was burned for each sample. Both the old cedar shingles and the pine siding had the greatest percentage of burned area (65% and 67% respectively). There was no significant difference between the two! Composite siding had the second least surface area burned (39%), and the stucco pieces showed only a scorched stain where the flame had contacted.</p> <p><b>Conclusions/Discussion</b> Cedar shingles are rated class "B" and should be more fire resistant than pine siding which has a class "C" fire rating. This was demonstrated by the new cedar shingles, which had a lower average percent burned area than the pine siding. According to the results of my experiment, the age of the cedar shingles increased their flammability. This implies that aged cedar shingles are more similar to class "C" fire-rated materials.</p>	
<b>Summary Statement</b> This project investigated and compared the flammability of various common residential siding materials, including new and aged cedar shingles.	
<b>Help Received</b> Thanks to my father who took me to construction sites to obtain the materials for my project. Thanks to Rob McGarvey who provided the materials I needed at the construction sites.	