



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Conor P. Hawblitzel	Project Number J1109
Project Title Impact of Roofing Materials on an Interior Fire	
Abstract Objectives/Goals The purpose of this experiment was to determine if the type of roofing material used had any impact on the temperature of the roof or the rate of destruction on a structure when a fire was started in the interior of that structure. Three different roofing materials, fiberglass composite shingles, treated red cedar shingles and cement tile shingles were tested. Methods/Materials Thirty two plywood structures were built for this experiment. Four different groups of houses, a control group with no roofing material and three separate experimental groups, each with a different roofing material, were burned to complete destruction. Each of the houses was ignited using a 2.96 centiliter plastic cup of gasoline and a 30 cm by 2.4 cm paper wick. The temperature of the center of the roof on each structure was measure at time intervals using a non-contact thermometer. Additionally, the rate of destruction was timed on each of the structures. Results The analysis from the data from these experiments show that type of roofing material used impacts both the temperature of the fire and the rate of destruction on and interior fire. Composite tile structures burned with the lowest temperatures and the longest time to completely destroy the structure .Wood shingle structures burned with the fastest rate of increase in temperature and the fastest rate of destruction to the structure. Both wood shingles and composite shingles burned. Cement tile structures were completely destroyed the fastest, due to the weight of the tile, however cement tiles do not burn. In this experiment, Shake Shingles are the worst type of roofing materials in the case of an interior fire. Composite shingles were the best type of roofing materials for an interior fire. Cement tile, although they did not burn, increased the rate of destruction due to their weight and contributed to the destruction of the structure faster than those with Composite Shingles. Conclusions/Discussion In this experiment, Shake Shingles were the worst type of roofing materials in the case of an interior fire. Composite shingles were the best type of roofing materials for an interior fire. Cement tile, although they did not burn, increased the rate of destruction due to their weight and contributed to the destruction of the structure faster than those with Composite Shingles.	
Summary Statement The purpose of this experiment was to find out if there was a difference of burn rate and destruction when the fire starts inside the house.	
Help Received Parents supervised cutting of materials and burning of test houses, proof read paper and helped with typing.	