



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jordan J. Francis</b>	<b>Project Number</b> <b>J2214</b>
<b>Project Title</b> <b>We Can Stop the Fire!</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective was to find the most effective way to protect a home from fire damage. It was hypothesized that Barricade Fire Retardant Gel would be most effective in protecting a home from fire damage.</p> <p><b>Methods/Materials</b> Method: (1) Get an adult to supervise tests (2) Apply fire retardants and let samples cure if required (3) Gather all materials and keep safety equipment at hand (4) Weigh wood sample (5) Clamp sample in place (6) Position propane torch 3" below sample (7) Ignite torch and allow sample to burn at 1500 degrees Fahrenheit for 1 minute (8) Remove torch (9) Use timer to record time sample continues to burn until flame dies out naturally (10) Remove sample from clamp (11) Weigh sample (12) Repeat with all 120 wood samples and retardants Materials: 20 Cherry wood samples, 4" in length; 20 Maple wood samples, 4" in length; 20 Oak wood samples, 4" in length; 20 Pine wood samples, 4" in length; 20 Redwood samples, 4" in length; 20 Teak wood samples, 4" in length; 18 Fire retardant samples; Latex paint / stain, foam brushes; Digital weighing scale; Timer; 2 Propane burners, Butane lighter; 2 Metal stands with clamping mechanisms; 1 Thermal probe; Tongs, goggles, face mask, gloves; 1 Class-A fire extinguisher; 1 Bucket of water</p> <p><b>Results</b> A majority of fire retardants that had to be mixed with paints or stains did not protect wood from being burnt significantly. However, some fire retardants that were used as a direct shield from oncoming fire, left the wood with most of the material intact, and often prevented combustion altogether. Redwood and Pine were most receptive to the retardants, while Oak and Maple were most combustible, despite treatment.</p> <p><b>Conclusions/Discussion</b> It was concluded that FlameStop Intumescent Paint was the best preventative fire retardant. Barricade Fire Blocking Gel was found to be the best protective fire retardant. VE-231 paint additive was discovered to be the least effective fire retardant. Through the course of the testing, it was also discovered that softwoods like Pine and Redwood are much more receptive to absorbing fire retardants than hardwoods like Oak and Cherry, and therefore, easier to protect from wildfire. In addition, it was discovered that Teak burned with a flame that did not easily self-extinguish. This was due to its high oil content that continued to provide fuel to sustain the fire.</p>	
<b>Summary Statement</b> Testing the most effective way to protect a home from fire damage.	
<b>Help Received</b> Mother helped acquire materials, supervise testing and put together board. Mrs. Williams helped with format of the board.	