



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) G. Will Abele, Jr.	Project Number J2199
Project Title Hot Pajamas! How Does Washing Flame Resistant Pajamas Multiple Times with Different Additives Affect Their Flammability?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I conducted this experiment to determine how washing flame resistant pajamas multiple times with different laundry additives would affect the flammability of the pajamas.</p> <p>Methods/Materials I cut ten strips of fabric from new, unwashed pajamas and timed how long it took each strip to ignite when held over a flaming candle. Next, I washed four pairs of pajamas three times. Pajama 2 was washed with Kirkland Ultra Laundry Detergent. Pajama 3 was washed with Kirkland Ultra Laundry Detergent and Kirkland Fabric Softener. Pajama 4 was washed with Kirkland Ultra Laundry Detergent and Oxi Clean Stain Remover. Pajama 5 was washed with Kirkland Ultra Laundry Detergent, Kirkland Fabric Softener, and Oxi Clean Stain Remover. I cut ten strips of fabric from each pair of pajamas and timed how long it took each strip to ignite. Lastly, I washed the same four pairs of pajamas seven more times, for a total of ten washings. Each pair of pajamas was washed with the same laundry additives shown above. I cut ten strips of fabric from each pair of pajamas and timed how long it took each strip to ignite.</p> <p>Results The unwashed pajamas ignited faster than the washed pajamas. The more the pajamas were washed, the slower they were to ignite. The effect of using different laundry additives was inconsistent and, in any event, minimal.</p> <p>Conclusions/Discussion Contrary to my hypothesis, unwashed pajamas ignite faster than washed pajamas. Laundry additives have little, if any, impact on the pajamas' flammability.</p>	
Summary Statement I investigated whether washing flame resistant pajamas multiple times with different laundry additives affects their flame resistance.	
Help Received I received guidance from my teacher throughout the process. Also, I received help from my parents with washing 40 loads of laundry and with burning the fabric strips.	