



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Lilah M. Blalock	Project Number J2108
Project Title The Potential Thermal Dangers of Artificial Turf	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of this experiment was to determine if artificial turf could be heated to a temperature hot enough to cause thermal injury and to discover the turf to air temperature correlation.</p> <p>Methods/Materials This experiment required three samples of artificial turf: green, yellow, and white. A sample of natural grass was used as a control. The samples were tested in a controlled wooden testing chamber. Each sample was heated by three different bulbs: a 50-watt, a 150-watt, and a 250-watt bulb. The 50-watt bulb was much weaker than the 250-watt bulb, and therefore, took longer to heat. This allowed a variety of different amounts of exposure times.</p> <p>Results The amount of exposure time did not affect the temperature of the heated artificial turf. The turf was at least 0.1°F-10°F hotter than the air. It was 10°F-30°F hotter than the natural grass. The hottest sample of turf was the whit turf heated by the 150-watt bulb to 100°F, reaching 114.8°F. Despite the color and exposure time, there were no statistical differences in temperature.</p> <p>Conclusions/Discussion The results of this experiment showed that the artificial turf, with a few exceptions, cannot reach a hot enough temperature to cause thermal injury. Some samples were hotter than others, and occasionally the turf reached a hot enough temperature to thermally burn human skin: 111.2°F. It is unlikely that a human could get burned at this temperature, because they would have to be in contact with the turf for seven hours. Although in most of the trials artificial turf did not reach a hot enough temperature to burn human skin, it would still be uncomfortable to the athletes utilizing the field. In comparison to natural grass, the artificial turf was much hotter. It was also shown that there wasn't a large difference in temperature between colors or exposure time. There was no particular color that seemed to be hotter than the rest during the experiment.</p>	
Summary Statement Artificial turf has the potential to thermally burn human skin, it is 0.1°-10°F hotter than the ambient air temperature, and it is 10°-30°F hotter than natural grass.	
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