



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

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Project Title
What Is the Effect of Smoke Inhalation on the Stability of a Spider's Web?

Abstract

Objectives/Goals
My goal for this project was to show all smokers that by smoking a cigarette, they are not only affecting the people surrounding them, but possibly the insects and animals that surround them. I wanted to see whether a web built by a spider not exposed to smoke could hold more pennies than a web built by a spider that was exposed to smoke.

Methods/Materials
I started by placing two wooden frames in 2 5- gallon water jugs that had been cut from the bottom. These served as supports for the spiders (orb web weaver spiders)to build their webs. In one jug, the spider was placed on the wooden frame. This jug was placed on aluminum foil and was covered at the top of the jug with a ziploc bag with holes punched in it. The other spider had pretty much the same conditions, but a cigarette was burned 2 cigarettes at 3 different times a day (6 A.M., 2 P.M., and 10 P.M.). The cigarettes were burned in an ashtray at the bottom of the water jug. At the end of 7 days, the wooden frames were removed which had the spider webs on it. The spiders were set free. I placed a blank sheet of paper on the webs to serve as a flat surface and recorded how many pennies each web held. I repeated this 5 times using a different set of spiders each time.

Results
Trial #1 Spider with smoke: 109 pennies Spider without smoke: 211 pennies
Trial #2 Spider with smoke: 102 pennies Spider without smoke: 201 pennies
Trial #3 Spider with smoke: 115 pennies Spider without smoke: 198 pennies
Trial #4 Spider with smoke: 99 pennies Spider without smoke: 187 pennies
Trial #5 Spider with smoke: 124 pennies Spider without smoke: 215 pennies

Conclusions/Discussion
This turned out to be a successful experiment. My original hypothesis was the spider exposed to the smoke will have a less stable web than the spider not exposed to smoke. The results showed that smoke did affect the stability of a spider's web. When a spider was not exposed to smoke, its webs were able to hold more pennies. However, the tested spider held only half of what the control spider held. In the end, my hypothesis was supported.

Summary Statement
My project measures how smoke inhalation can dramatically affect common behavior such as a spider building a strong web.

Help Received
My mother helped me purchase most of the items such as the cigarettes and the water jugs.