



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Erik M. Alkire	Project Number J2202
Project Title Are Your Lights Harming You?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to determine whether different man-made light sources emit potentially harmful invisible rays or particles. To test this I built a cloud chamber and exposed it to various commercially available lights. I hypothesized that all of the light sources tested would be harmless. I thought that if any light source was likely to emit invisible rays or particles it would be the laser because of the way it produces light.</p> <p>Methods/Materials To test my hypothesis, I built a cloud chamber using a sealed glass fish tank, an aluminum plate, one liter of Methyl alcohol, five square feet of felt, three blocks of dry ice, and an electric blanket. I exposed the chamber to each of the light sources for two consecutive minutes and recorded the tests with a Samsung HMX-U10 high definition camcorder. Using a computer program, Adobe After Effects, I reviewed the video footage frame by frame to count the number of events that occurred in the cloud chamber. I used fluorescent lighting as my control and kept it on throughout all of my tests in order to be able to see the tracks left in the cloud chamber by ionizing radiation.</p> <p>Results In my results, the light sources went from a baseline of 7 events per minute with the fluorescent control to the most active test: the LCD Display at 101 events per minute, suggesting throughout three trials that it could be radioactive. My other tests include: A 600 watt halogen disco light at 5 events per minute, an incandescent flashlight at 6 events per minute, a 4.9 mW green laser scanner at 16 events per minute, an LED spotlight at 18.5 events per minute, a 150W halogen flood light at 21 events per minute, a 5mW green laser pointer at 46 events per minute, and a UV Light at 60.5 events per minute.</p> <p>Conclusions/Discussion It appears as though LCD (Liquid Crystal Display) Screens are radioactive, but to thoroughly prove this, tests with more sensitive equipment, such as a Geiger counter, are necessary.</p>	
Summary Statement My project is about building a cloud chamber to determine whether man-made light sources emit potentially harmful invisible rays or particles.	
Help Received Father acquired and supervised use of methyl alcohol and dry ice	