



CALIFORNIA STATE SCIENCE FAIR 2008 PROJECT SUMMARY

Name(s) Maximillian F. Wolfe	Project Number J1024
Project Title CFL: Compact Fluorescent Lamps or Carelessly Fouling Landfills?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The Energy Independence Act of 2007 was signed on December 19, 2007. It says the incandescent light will be phased out by 2012. Will the amount of energy saved by CFL (compact fluorescent lamp) be enough to offset the harmful effects mercury will have on the environment?</p> <p>Methods/Materials I used a meter to measure the amount of kilowatts used in each bulb in a twenty four hour period. Calculated the cost by multiplying each figure by the cost of a kilowatt from an electric bill, and then totaled the cost for each household. I asked 100 people if they were aware that CFL bulbs contained mercury and could not be thrown in the trash. I researched hazards, health effects, EPA standards, and cleanup costs. After this I did a cost analysis between the two bulbs, and compared it to cost of cleanups, Superfund, health costs and hardships.</p> <p>Results Results demonstrate that CFL bulbs use less energy than incandescent. One CFL per household in California saved \$931,221,052 per year. However, my survey showed a high percentage of people were not aware that CFL bulbs contained mercury, could not be thrown into the trash and not educated on proper handling. Recycling for one CFL bulb per household in California would cost \$5,571,485 in order to prevent mercury from entering the landfills. Landfill cleanups can cost \$2,000,000 and a mega Superfund can cost over \$140,000,000. Clean ups could cost millions per year.</p> <p>Conclusions/Discussion I have proven that CFL bulbs save energy, but people are not aware that CFL bulbs contain mercury and should be recycled. Currently, the recycle rate is below 24%. With education, the percentage of recycling should rise to 80% by 2009. The mercury that enters the landfill can leach into the water and cause illness and birth defects. The incandescent should not be replaced with the CFL without informing the public of proper handling and disposal. Figures do not include medical costs and hardships caused from mercury leaching into the waters and mercury vapor. We can not predict how much damage CFL bulbs will actually cost until the damage is done. One broken CFL bulb has mercury vapor in excess of the EPA standards and without proper handling could cause harmful exposure. CFL bulbs are made in China where there are no regulations or guidelines. Education first, then we can save energy, money and then get rid of the incandescent.</p>	
Summary Statement My project is about comparing the cost benefits between CFL bulbs and incandescent bulbs, and whether the savings are worth the harmful effects on the environment.	
Help Received People called from the EPA while I was in school,so my mother asked them the questions I made for them and wrote down all of their answers. She took photos for me. She printed all the emails I received from different people. She taught me how to do a table on the computer. She stayed with me to do my survey .	