



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> <b>William C. Piper</b>	<b>Project Number</b> <b>J0923</b>
<b>Project Title</b> <b>The Effect of Electromagnetic Fields on Eremosphaera Algae Cells</b>	
<b>Abstract</b> <b>Objectives/Goals</b> Environmental exposure to man-made electromagnetic fields has been steadily increasing with growing electricity demand and ever-advancing technology. There are conflicting studies regarding health issues and electromagnetic fields. The purpose of this experiment was to find out how man-made electromagnetic fields affect eremosphaera algae cells. I predicted that exposing algae cells to an increasingly stronger electromagnetic field would damage them in an increasingly negative way. <b>Methods/Materials</b> My procedures involved building a testing apparatus that would hold six test tubes each wrapped with an increasing number of copper wire coils. The control test tubes were kept in a separate room away from the testing apparatus. Slides were made of the algae culture solution before and after exposure to the electromagnetic field. Approximately 100 cells were counted for each sample and normal cells verses abnormal cells were recorded. The experiment was repeated three times. <b>Results</b> The results, after averaging all three trials, showed that the number of abnormal cells increased as the exposure to the electromagnetic field increased. There was a 32% increase in abnormal cells between the control group (no exposure) and Test tube #6 (greatest exposure). <b>Conclusions/Discussion</b> In conclusion, my hypothesis was correct. The algae cells were affected negatively by an increasingly stronger electromagnetic field. There was an increasing percent of abnormal cells at higher levels of electromagnetic exposure. This experiment supports research that shows biological changes from exposure from man-made electromagnetic fields. Most studies confirm that more research is needed on electromagnetic fields and health risks.	
<b>Summary Statement</b> My project tested the effect of man-made electromagnetic fields on eremosphaera algae cells.	
<b>Help Received</b> My father helped me build my testing apparatus; Dr. Schmalhorst taught me how to make microscope slides; Mr. Price showed me how to measure an electromagnetic field.	