



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Mason Mallory; Vance Mallory	Project Number J1714
Project Title How Pollutants and Natural Elements Can Affect the Plant Cells of a Clover	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Objective: In this project, using a microscope and slides, we compared the effects of man made and natural pollutants on the plant cells of a grass clover. Our hypothesis is that bleach and salt will have the most dramatic affect on the plant cells.</p> <p>Methods/Materials Materials and Methods: We used four solutions for our test: bleach, chlorine, salt and water. There was a control group with nothing added to the sample. To complete this experiment, we put samples of clover leaves on 15 slides, 12 of these slide were treated with the different solutions, placed by a dropper directly onto the leaf tissue. We observed the plant cells and judged them by how many cells there were and the color for seven days to see how they react differently and took notes and pictures throughout the process.</p> <p>Results Results: After seven days, bleach had the most dramatic affect on the plant. It started to turn brown, and dissolve the leave and its cells from the outside edges towards the center. Chlorine and salt seemed to have similar effects on the plant cells, leaving darkened black spots and holes in the plant cell tissue.</p> <p>Conclusions/Discussion Conclusions: Our hypothesis was that bleach and salt would have the most dramatic affect on the plant cells. By the end of the seven day period, our hypothesis was proven correct.</p>	
Summary Statement We studied the affect different solutions, both natural and man made, had on a clover plant.	
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