



**CALIFORNIA STATE SCIENCE FAIR  
2007 PROJECT SUMMARY**

<b>Name(s)</b> <b>Marci F. Rosenberg</b>	<b>Project Number</b> <b>J0723</b>
<b>Project Title</b> <b>The Effect of Compression on Granular Media</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of my project was to examine the effect of compression on granular media. Specifically, I was interested in the phenomenon of the compression of wet sand, compared to the compression of other granular media. <b>Methods/Materials</b> To accurately test my hypothesis, I used a simple contraption consisting of a balloon, straw, rubber band, and a ruler. I added approximately 1/8 cup (.0295 liters) of material to the balloon, and using a 2-inch C-clamp. I applied compression to the material inside, one revolution at a time, and tracked the results. <b>Results</b> My results indicated that water, clay, glass stones, dissolved salt water, and magic sand had similar gains in the water level as compression was applied, although water, dissolved salt water, and clay, had slightly steeper slopes than the other materials, as pointed out in my graph "Water Elevation vs. Compression." In complete contrast, the water level of sand decreased at a significant rate. <b>Conclusions/Discussion</b> My prediction of the results was mixed. Although I correctly predicted the increase in water level of the straw during experiments with dissolved salt water, magic sand, glass stones, clay, and water, I was deeply surprised by the decrease in the water level in the straw while compressing sand. The level of water in the straw lowered when sand was compressed possibly because there are air voids, letting more water rush into the balloon instead of going up the straw.	
<b>Summary Statement</b> I tested how the application of pressure on a balloon filled with a granular material, for example sand, saturated with water, would affect the material inside.	
<b>Help Received</b> Brother helped me understand some concepts; father supplied C-clamp.	