



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

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Project Title Acid Rain, Minus the Acid	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this experiment was to find a solution to two questions: how does acid rain affect soil and does Tums, Alka-Seltzer, or Zantac 75 absorb the most acid?</p> <p>Methods/Materials Materials: pH strips, glass jars, soil, sulfuric acid, water, rocks, ect.</p> <p>Method:Day 1- Setup and Addition of Acid Rain: 1. Wash jars with filtered water, then dry. 2. Label the 4 experiment jars: Jar 1, Jar 2, Jar 3, and Control Jar. 3. Wash all the rocks thoroughly with filtered water. 4. Layer the bottom of each jar with a layer of rocks so that there is drainage for excess fluids to escape to. 5. Test the pH of the soil and record it. 6. Measure 3 cups of soil into each jar on top of the rocks. 7. Mix acid with filtered water in a beaker and measure the pH of the mixture. 8. Test the pH of the mixture and record it. 9. Pour mixture (50 mL) into a spray bottle. 10. Spray soil in Jar 1, Jar 2, and Jar 3 with mixture 15 times. 11. Cover all 4 jars with plastic wrap. 12. Place all 4 jars on shelf for 24 hours.</p> <p>Day 2- Addition of Antacids: 1. Test pH of the soil in all 4 jars and record it. 2. Fill 3 beakers with 25 mL of filtered water. 3. Dissolve 3 tablets of Tums in one beaker, 3 tablets of Alka-Seltzer in another beaker, and 3 tablets of Zantac 75 in the third beaker by stirring them with a different pipet for each beaker. 4. Pour the mixture of Tums into Jar 1, pour the mixture of Alka-Seltzer into Jar 2, and pour the mixture of Zantac 75 into Jar 3. 5. Cover all 4 jars with new plastic wrap and place them back on the shelf.</p> <p>Day 3- Collection of Results: 1. Find pH of soil. 2. Repeat all previous steps for 3 more tests.</p> <p>Results In all 4 experiments, the acid brought the soil from a neutral 7 to an acidic 6. In all of the experiments, the 3 antacids (Tums, Alka-Seltzer, and Zantac 75) brought the pH of the soil back up to at least a 7, if not an 8. Test 1: Tums-7, Alka-Seltzer-8, Zantac 75-7 Test 2: Tums-7, Alka-Seltzer-7, Zantac 75-8 Test 3: Tums-7, Alka-Seltzer-8, Zantac 75-7 Test 4: Tums-7, Alka-Seltzer-7, Zantac 75-7</p> <p>Conclusions/Discussion The conclusion of this experiment is that acid rain makes the soil pH more acidic, and all three of the</p>	
Summary Statement This project is about how acid rain affects the pH of soil and which of Tums, Alka-Seltzer, and Zantac 75 absorbs the most acid from the soil?	
Help Received	