



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

<b>Name(s)</b> <b>Kent R. Gleim</b>	<b>Project Number</b> <b>J0705</b>
<b>Project Title</b> <b>The Effect of Soil Moisture on the Percolation Rate of Volatile Fluids</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My goal is to determine what effects soil moisture has on the percolation of volatile fluids. This is because there are people spilling loads of volatile fluids around the world and are not realizing the affects the aftermath has on the plant; example poisoning ground water or reaching inhabited areas. <b>Methods/Materials</b> I will do this by First placing a tray on a weight scale. Pour my earthly material into a tray. Than Pour 1% water in the tray. Next mix the compound evenly. Place the moist material in the clear casing. Pour 2 ounces of the volatile fluid on the material. Let it percolate for 45 seconds. Place it horizontally on a nonflammable flooring. Open the casing and place the material on the leveled area. Use a lighter to ignite the liquid, wait till the flame has died out. Measure how far the volatile fluid percolated by measuring how far the remains of the flame traveled by inches. Finally, repeat test nine more times, then do the same with the second material; do the entire process again using 2% moisture instead of 1%, and again using no water to act as a control group. I will use several bags of play sand to act as the very fine material. Several bags of all-purpose sand as the coarse material. One sturdy aluminum tray. One ruler. One butane lighter. One clear plastic casing. A plentiful source of water. One timer or stopwatch. A large supply of lighter fluid. One measuring cup that has ounce marks. One weight scale. Lastly a gardening shovel. <b>Results</b> My results were that the control group percolated the least while the 2% moisture test percolates the farthest. My theory was that the water opened up the pour of the grains causing air ways to open up, and that the less water it had caused less air to get through. My theory is also that the more coarse the material, is the less grains will fit in the casing meaning more oxygen to enter, causing the fire to last longer and let it burn more of the material. <b>Conclusions/Discussion</b> Once I have gained my results I have found my hypothesis to be correct. Stating that the material with 2% moisture level would percolate the farthest. I also discovered compacting the material will cause it to prevent the fire from igniting since fire needs oxygen to ignite and compacting it would block off the air ways meaning no fire. I have also learned that most of the liquid sank to the center, which possibly due to either depressions or the grains shifting.	
<b>Summary Statement</b> I am determining the effect of soil moisture has one the percolation rate of volatile fluids, by using two different levels of moisture (1% and 2%) and a control, each had two materials with differant density levels (coarse and very fine).	
<b>Help Received</b> Mother helped with the expiement and placing the board together. Mr. (Carl) Gong gave advice and tecnical support. Mrs. (Diane) Loflin helped with preperation. Father helped with clean up.	