



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Oliver Chen	Project Number J1106
Project Title Ozonification	
Objectives/Goals - Is it possible to build a Tesla coil at home using readily available materials? Can the ozone gas created by the Tesla coil be used to purify water? How efficient and effective is cleaning water with ozone gas created by a Tesla coil?	
Abstract	
Methods/Materials -Materials Neon Sign Transformer, 10 ft. of 600 volt stranded copper wire,2 ft. of bare copper wire,20 ft. of 3/4 in. pvc piping,6 3/4 in pvc elbows,6 3/4 in. pvc tees,5 gal. bucket,3 gal. of water,800g. of table salt,500 ft. of 24 gauge enameled copper magnet wire,Two 3 in. nylon screws,6 nylon hex nuts,1 ft. of 1 in. vinyl tubing,1 in. pvc cap,Small fish tank air pump,Tungsten spark gap, Volt meter,One 9 volt battery,16 prepared nutrient agar plates,16 sterile cotton swabs. -Methods Measure out approximately 100 mL samples of Tap water, Filtered Water, Pond water(collected from a local park), Rain Water(collected in a beaker), River Water(collected from the Lake forest O'Neil Creek) and Distilled water, Place the 100 mL sample of tap water in a medium size beaker or measuring cup,Inoculate a plate by using a simple zigzag streak pattern,Measure and record the amount of electricity in the water with a volt meter,After 10 minutes,turn off the transformer and pump,Inoculate another plate the same way, Measure the amount of electricity in the water with a volt meter,Turn on the pump and Transformer for 20 min,Measure the voltage with the 9 volt battery and voltmeter,Compare the three voltages of tap water and tap water after the purification for 10 and 20 minutes,Compare the agar plates after 24 hours in incubation by counting the number of bacterial colonies,And record the results, Repeat for the rest of the 100 ml water samples.	
Results Results were that water purified by ozone had a lower voltage. It also had a lower bacterial count indicating that this method of purifying water by ozone is effective at removing bacteria from water.	
Conclusions/Discussion It is possible to build a Tesla coil at home using readily available materials. The ozone gas created can be used to purify water. Purifying water through contact with ozone can purify water as effectively as conventional methods such as filtering. I concluded that ozone is an effective way to treat water for bacteria and other organisms.	
Summary Statement To purify water with ozone created by a Tesla coil.	
Help Received Father helped get materials.	