



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Colin P. Landeck	Project Number J1119
Project Title Fleece, Cotton, or Wool: Which Will Keep You Warmest in the Rain?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To test which material keeps you warmer when it is wet and which material keeps you warmer when it is dry, by testing which material will best insulate hot water. The materials that to be tested are polyester fleece, cotton, wool and there will be a control with no material used as an insulator.</p> <p>Methods/Materials Procedure: Cut materials to correct sizes. Wrap the material around each yogurt container and secure with rubber bands. Drill a hole into the top of each lid. Fill each container with hot water. Secure lid to container. Lay material circles on top of lid. Every 5 minutes for 50 minutes, remove material from lid, insert thermometer into water through the drilled hole, allow thermometer time to reach the temperature of the water, read and record temperature into Science Log. For #Wet Experiment#, spray each container eight times with spray bottle around the sides and twice on top. Conduct the above process twice for wet and twice for dry and enter data into a chart. Materials: Three Yogurt Containers and Lids. One Deep Fry and Candy Thermometer. One 28# x 5# Piece of Fleece, Cotton & Wool & two circles that are 15.17 inches in circumference. One timex watch. Twelve Liters of Water. Six Rubber Bands. One Tape Measure. One Sharpie pen. One pair of scissors. One Spray Bottle.</p> <p>Results The results of my experiment show that fleece keeps you the warmest when it is wet and also when it is dry. On average, the fleece-insulated water lost the least amount of temperature both when it was wet and when it was dry. The results showed me that it is warmer to not wear a shirt than to wear a wet cotton shirt. According to the results, if you have no insulation (clothing) you will lose less heat when you are wet than when you are dry. Based on my personal experience, this is most likely due to an error in the experiment.</p> <p>Conclusions/Discussion In conclusion, the results supported my hypothesis that fleece would keep you the warmest when it is wet and when it is dry. However, I believe that the experiment might have been slightly flawed because some things that should have been controlled were not. For example, the temperature of the water in the third trial began at 134 degrees but the fleece container started at 130 degrees. There may have been a few errors in measurement of the temperature because the thermometer should have been in each container for the same amount of time.</p>	
Summary Statement Using wet and dry materials (polyester fleece, cotton and wool) determine which insulates hot water best.	
Help Received My parents helped to type the report and to buy the materials	