



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Anne S. Otterbein	Project Number J1316
Project Title How Different Materials Insulate	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals For my science fair project I chose to research how different materials insulate. My hypothesis was that water resistant materials, like fleece, would insulate the best.</p> <p>Methods/Materials I used four pairs of socks made of four different materials (cotton, wool, fleece and polyester), five identical glass bottles, hot water, and five thermometers. I covered four of the bottles with the different kinds of socks and left one control bottle uncovered. I filled each of the bottles with hot water to test how well each material insulated. In the first experiment I used only dry socks and then I repeated the steps a second time using only wet socks.</p> <p>Results The fleece socks insulated the best when the socks were dry. Wool insulated the best when I repeated the experiment with wet socks.</p> <p>Conclusions/Discussion In conclusion, the material that insulated the best when dry was fleece. Fleece insulated the best because it retains air which helps to maintain the starting temperature. Therefore, my hypothesis was correct! However, my hypothesis was incorrect when the socks were wet because fleece traps in air and when it is wet there is no air to trap. Therefore, wool insulated the best when wet.</p>	
Summary Statement My project tests how well four different materials (cotton, wool, fleece and polyester) insulate.	
Help Received My mother helped me purchase materials for the project.	