



**CALIFORNIA STATE SCIENCE FAIR  
2012 PROJECT SUMMARY**

<b>Name(s)</b> <b>Rajiv Sancheti</b>	<b>Project Number</b> <b>J1512</b>
<b>Project Title</b> <b>Portable Milk Purification System</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this project is to determine whether UV sterilization can pasteurize milk. <b>Methods/Materials</b> To test my hypothesis I used 8 different UV exposure durations: 16 seconds, 32 seconds, 1 minute, 1 minute 16 seconds, 2 minutes, 4 minutes, 8 minutes and 25 minutes. In each test 500 ml of milk was exposed to UV light. Then, using an aseptic procedure, I took 100 microliters of milk from each test run and placed each sample onto separate Agar Plates. The Agar Plates were then placed in the incubator for 24 hours. The materials used included. UV LAMP (11w 254 nm), UV light Shield, Receptacle, Ballast, Raw Goat Milk - 3 quarts, Raw Cow Milk - 4 quarts, Incubator, Magnetic Spinner, 2 Beakers - 500ml and Agar Plates. <b>Results</b> Overall, increased exposure to UV light led to a decrease in new bacteria growth. Results for the Goat Milk plates were negative because almost all of them had fields growing. However in the case of Cow Milk no colonies were observed with 25 minutes exposure. <b>Conclusions/Discussion</b> My results showed me that 25 minutes of exposure to UV light could pasteurize Cow milk. Goat milk did not get pasteurized probably due to the fact that it is more opaque than Cow milk, and UV light has a hard time penetrating it. The economics of UV pasteurization vs. heat pasteurization needs to be studied. Additionally, research should be done it see if UV pasteurized milk has more nutrients than heat pasteurized milk.	
<b>Summary Statement</b> I have demonstrated that it is feasible to pasteurize Cows milk using UV light.	
<b>Help Received</b> The experiments were preformed at A Schamhl Science Workshop under the supervision of Dr. Youssef. My neighbor George Pontis helped me select and setup the UV light and ballast.	