



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Laura A. Beyer	Project Number S0503
Project Title To Lye or Not to Lye	
Abstract Objectives/Goals To determine if different fats/oils affect the pH level of soap after the saponification process. Methods/Materials For my first test I made four batches of soap using a basic recipe, varying only the type of fat/oil in each batch. After three weeks I tested the pH level of the soaps. For my second test, I made four more batches of soap, again varying the type of fat/oil in each batch, but also basing the amount of lye on the saponification value of each fat/oil. Results The pH levels of the first test ranged from 11.5 to 13.5, all above the normal pH range of 10.5 or less for soaps. The pH levels of the second test ranged from 9.5 to 10.0, which is a much more narrow range and all within the normal pH range for soap. Conclusions/Discussion I concluded that different fats and oils do affect the pH level of soap. I learned from my research that this is because each fat is made of a unique combination of fatty acids which affects the molecular weight of the fat, which, in turn, affects the amount of lye needed for saponification.	
Summary Statement My project is on the chemistry of soapmaking and how different fats/oils affect the pH level of the soap.	
Help Received My mother supervised my soapmaking and gave advice on organization of the project.	