



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Laura J. Schisler	Project Number J1128
Project Title How Does Sodium Carbonate Influence the Process of a Fiber Reactive Dye?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this experiment is to determine how the addition of sodium carbonate fixer alters the dyeing process when using fiber reactive dyes. The hypothesis states if twenty 100% cotton fabric samples are dyed with a fiber reactive dye, omitting the soda ash pretreatment for ten of the samples, then the sodium carbonate fixer treated fabric samples will produce a more vibrant hue than those samples dyed without the use of a sodium carbonate fixer. In this experiment, twenty 12-centimeter squares of 100% cotton fabric were used.</p> <p>Methods/Materials On January 8, 2005, twenty 12-centimeter squares of 100% cotton fabric samples were laundered and tied with small rubber bands. Ten of these samples were soaked for twenty minutes in a sodium carbonate fixer while the other ten swatches were soaked for twenty minutes in tap water prior to dyeing. The samples were then dipped in Rainbow Rock Green Fabric Dye, a fiber reactive dye, and set out for eighteen hours. On January 9, 2005, the twenty fabric samples were triple rinsed in clean tap water, unbound, blotted, and then dried in a gas dryer on a permanent press setting.</p> <p>Conclusions/Discussion In conclusion, when dyeing with fiber reactive dyes, using a soda ash fixer will vastly improve the hue and vibrancy for a 100% cotton fabric, thus proving the hypothesis correct. The samples dyed with a prior soak in water did not produce a covalent bond thereby leaving them with a blue and yellow coloration even though a green dye was used.</p>	
Summary Statement This project explores how the addition of a sodium carbonate pre-soak influences the vibrancy of cotton fabric swatches dyed with fiber reactive dye.	
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