



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Julian Chow	Project Number J2207
Project Title Laundry List: Check Washing	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My science fair project is to test which type of ink(dye versus pigment based) in common pens works best to prevent check washing.</p> <p>Methods/Materials Six different bank checks were written out with a variety of pens that are commonly used in daily life. Each bank check was labelled accordingly to the type of pen used. All checks were washed with acetone for three minutes and let dry. The rate of ink disappearance was recorded and compared.</p> <p>Results The Bic pen immediately started to lose ink in the first 15 seconds, by 30 seconds it has lost a lot of ink. At 120 sec the ink was almost completely gone but never fully disappeared. The Papermate also immediately started to lose ink in the first 15 seconds to 30 seconds. At 45 seconds, it had lost a lot of ink. It stayed at this rating until the end of the experiment. Both Papermate and Bic continued to fade throughout the whole experiment, except the Papermate had a little more ink left on the check at the end.</p> <p>The two pigment based pens performed a lot better. The Zebra#s Sarasa lost very little ink when it was first dipped in the acetone and then it stayed the same afterwards. The Uni-ball 207 did not lose any ink throughout the entire 3 minutes. The writings stayed on the check as it has never been altered or washed. One interesting fact to note is that, after washing the checks, the acetone from the dye based checks came out light blue. The acetone that came from the pigment ink came out clear just like it was before washing.</p> <p>Conclusions/Discussion In conclusion, the checks written with the pigment based pens, Zebra#s Sarasa and Uni-ball 207 did not wash off, while most of the words written in the dye based ink pens, Papermate and Bic was washed away within the first minute of washing in acetone. The reason why Sarasa and Uni-ball 207 worked so well was because of its pigmented ink. Once these inks are inscribed onto the paper, the pigment particles from the ink were trapped within the fibers of the paper which caused the writing to stay on the check. In another word, the ink actually goes into the paper. The dye based inks do not adhere to the paper at all, so the ink comes off easily. The ink of the dye comes off and leaves the check blank.</p>	
Summary Statement Pigment based inks work the best to prevent check washing.	
Help Received My mom helped supervise the experiment.	