A115 Evaluation of "Non-Toxic" Cleaners' Effects on Presumptive Blood Tests — Can "Green" Products Make a Difference?

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After attending this presentation, attendees will understand the effects of "green" cleaners on two commonly used presumptive blood tests which may lead to a change in protocol of the testing of suspected bloodstains at a crime scene or in the laboratory setting.

This presentation will impact the forensic science community by demonstrating that visual characteristics of blood may not necessarily be relied upon when deciding to test for blood. Important evidence may be missed if appropriate tests and collections are not attempted. This presentation will be of use to crime scene first responders and laboratory personnel who work with these presumptive blood tests on a daily basis and who may come across evidence that has been treated with a "green" cleaner. Many stains at a crime scene or in the laboratory may be dismissed from testing due to the physical characteristics of the stain.

This study demonstrates that visual characteristics of blood may not necessarily be relied upon when deciding to test for blood. Important evidence may be missed if appropriate tests and collections are not attempted.

The presumptive blood tests Kastle-Meyer (phenolphthalein) and Hemastix® are commonly used at crime scenes and in crime laboratories to determine if blood may be present. However, an attempt to clean up a crime scene may yield negative or false-negative results possibly based on the cleaner used to dispose of the biological material present. Non- toxic or "green" cleaners are becoming a more common product on the market and may be in more households than ever before. Experiments were conducted to determine what, if any, effects "green" cleaners had on the ability of the Kastle-Meyer and Hemastix® tests to detect the presence of blood on common substrates.

The data presented supports the hypothesis that the more environmentally-friendly cleaners did not have a negative effect on the Kastle-Meyer or Hemastix® tests' ability to detect blood under different experimental conditions on common substrates encountered in the field and in the lab. Blood was still detected using both tests on substrates treated with the cleaners. Positive results were also obtained on substrates where the blood and cleaners had been mixed and the stains were left to dry for a determined amount of time. Blood was also detected on a cleaned substrate, which was previously stained with blood and then cleaned with a test cleaner, which had no visible blood staining.

This study can lead to further experiments on the ability of the presumptive blood tests to detect blood from a substrate cleaned with a "green" cleaner, and thus leaves no visible blood staining. Studies using DNA analysis on the blood:cleaner mixtures to determine if the "green" cleaners have a negative effect on retrieving a usable, forensic DNA profile using common forensic laboratory protocols would also greatly add to the information already gathered regarding the effects chemicals (i.e., cleaners, forensic presumptive tests, latent fingerprint tests) have on forensic DNA analysis.

Blood, Green Cleaners, Presumptive Tests

 ** Presenting Author*