



A43 Recovery of DNA From Black Powder Enhanced Latent Fingerprint Lifts Archived Against Matte Acetate

Shelly Steadman, MS, Steven R. Hooper, PhD, Sarah C. Geering, BS, and Stephanie King, PhD,
Sedgwick County Regional Forensic Science Center, 1109 North Minneapolis Street, Wichita, KS 67214*

After attending this presentation, attendees will gain an understanding of the inherent problems with recovering DNA from black powder enhanced prints. Attendees will be introduced to performance verifications conducted by the laboratory after receiving a court order to conduct post-conviction testing on matte acetate cards collected over 30- years ago. Attendees will also be introduced to relevant judicial issues, especially those regarding hearings before a trial court concerning whether this testing would be conducted on a post-conviction case.

This presentation will impact the forensic science community by highlighting the laboratory's performance verification which was heard by the judge at a Bruner hearing and was instrumental in his decision whether there is DNA to be tested, and if so, whether that DNA could possibly be exculpatory. This decision is important because it sets precedence for future post-conviction test requests in the state of Kansas.

The purpose of this study was to examine methods for removal, extraction, and profiling of DNA entrapped between latent tape and matte acetate. The study was driven by court order to conduct DNA analysis on latent lifts collected from a crime scene in 1977. The tape lifts were archived against matte acetate cards and varied in size; however, all were of substantial area (comprising no less than 25 cm²) and extraction in full was not feasible. Since the laboratory does not routinely type such latent lifts, a performance verification was conducted that tested swabbing and scraping recovery techniques from fingermarks placed on adhesive, latent lifts collected from glass, and latent lifts collected from glass following routine black powder enhancement. Preliminary results indicate that while the adhesive on common lift tape and hexane do not inhibit one's ability to obtain full fingerprint donor profile, recovery of appreciable quantities of DNA was more difficult once the adhesive was fixed to the matte acetate card and lessened even further when enhancement by black powder was used during processing. Samples selected for STR amplification following the dusting/lifting procedure did not result in profiles suitable for comparison purposes and detection of extraneous peaks not expressed by print donors occurred for some extracts. A Bruner

hearing was set to argue whether there was DNA remaining to be tested, and if so, whether that DNA could possibly be exculpatory in this post- conviction matter. Laboratory testimony concluded that this historical evidence should not be tested further since these processes demonstrated little potential for generating accurate profiles from laboratory simulated samples; these studies weighed heavily in the judge's decision to not require the testing.

Fingerprint, DNA, Latent Lift