



D2 Fingerprint Enhancement on Used Prophylactics

Alan A. Price, MA, University of Northern Colorado, Candelaria Hall, Rm 2285, Campus Box 147, Greeley, CO 80639*

The goal of this presentation is to demonstrate that because prophylactics can be used in several clandestine manners, when discovered, efforts should be made to process them for latent fingerprints to possibly help identify an offender.

This presentation will impact the forensic science community by strongly encouraging crime scene technicians and criminalists to properly collect, retain in evidence, and process used prophylactics. The most conventional methods of evidence packaging and fingerprint enhancement were relatively ineffective and, therefore, more advanced methods of fingerprint development are encouraged.

The enhancement of fingerprints on used condoms is significant because condoms are used in two clandestine manners: (1) condoms are used to transport illicit drugs and other contraband by being ingested or concealed within various body cavities; and, (2) some sexual predators sometimes use condoms during the perpetration of their sexual assaults. Crime scene technicians discovering used prophylactics may not find it significant at the time to collect, retain as evidence, or process used condoms for latent fingerprints.

This research focused on using the four most conventional methods of latent print development to determine if prints could be developed on used prophylactics. The first of the four methods involved cyanoacrylate ester fuming, followed by cyano-blue dye stain, and then examination with an alternative light source. The second method was cyanoacrylate ester fuming, followed by magnetic powder brushing. The third method used Small Particle Reagent (SPR). The final method involved cyanoacrylate ester fuming, followed by staining with Sudan Black dye. All four methods were studied in an attempt to develop latent prints on six different styles of three major brands of condoms. The scope of this research excluded the ninhydrin process since numerous studies have used this as the method for latent print development on latex gloves. The results from this study indicated the four most conventional methods used were highly effective for quality latent development on any of the samples, even though minimal ridge definition was developed.

Six styles of three major brands of condoms were used in this study. The condoms were divided into two groups and a latent print was placed on each condom in each group. A sebaceous standard was used to keep prints consistent. Regarding Group 1, a print was placed 25 days prior to processing and placed into evidence. This was done to assess whether delayed processing detracted from the enhancement process. Each condom was then individually packaged in a paper envelope during storage and labeled, pending the enhancement process. The 25-day retention period was selected as the arbitrary length of time that evidence might be in storage prior to undergoing an enhancement process. With the second group (Group 2), a print was placed 24 hours prior to processing. Twenty-four hours was the arbitrary time established for a condom that might be recovered at a crime scene or from a suspect and require immediate laboratory analysis for latent prints. Again, the samples were placed in individual paper envelopes. Researchers used the right index finger coated with a sebaceous film as a standard on the Group 1 25-day samples. When the second sample, Group 2, was prepared, the same researcher used his right thumb coated with a sebaceous film as a standard.

One type of each style of condom from each group was processed with the four different development methods. The first analysis method (A) involved cyanoacrylate ester fuming followed by cyano-blue dye stain and then examination with an alternative light source used in the visible wavelength range from 380nm–470nm. The second method (B) was cyanoacrylate ester fuming followed by magnetic powder brushing. The third method (C) used SPR. The final method (D) used cyanoacrylate ester fuming followed by staining with Sudan Black dye. The results of these methods are seen in Table 1 and Table 2 below.

There was no significant difference in latent print enhancement between the condoms tested in the 25-day sample and the 24-hour sample. Even though the enhancement methods conducted in this study were basically ineffective, it is strongly encouraged that prophylactics found at crime scenes and/or being used for clandestine smuggling should still be processed for possible latent fingerprints. Air drying individual prophylactics prior to packaging as evidence is strongly recommended to prevent destruction of ridge definition caused by a condom adhering to the packaging material and to itself.

Additional research conducted on used prophylactics is strongly recommended, using such methods as Vacuum Metal Detection (VMD) and other contemporary chemical processes.



General Section - 2014

Clandestine Smuggling, Sexual Assaults, Latent Fingerprint Enhancement