B153 A Study of Fabric Frequency

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Attendees will learn an example of fiber content and frequency distribution among college students over time.

The majority of reported victims and offenders of sexual assault are college aged, with the rape victimization highest among 16 – 19-year-olds. In 2002, nearly 4,000 sexual assaults were reported on college campuses nationwide. These crimes involve considerable contact between the perpetrator and the victim, allowing fibers to provide information about the crime scene as well as the vehicle used to transport a victim. This presentation will impact the forensic community and/or humanity by demonstrating data from the current project that helps to answer questions such as which fibers are more prevalent than others? Which fibers are rare? Are these fibers rare, or just not as common within this particular population? Population studies provide forensic scientists with a basis for understanding and interpreting the evidence they analyze, especially as it varies across geography, culture, and economic status.

This paper will present the work done at West Virginia University to determine the relative frequencies of fiber types and content in a collegeaged cohort over time. The research was conducted throughout the month of April 2004. On a voluntary basis, 60 students were asked to describe their clothing three days a week. A variety of garment types (i.e., shirt, sweater, t-shirt, jeans, pants, etc.) were available to choose from when examining up to two top garments and one bottom garment. This excluded outer garments, such as jackets, coats, or slickers. Using the Kelly system, primary, secondary, and tertiary colors of each garment in addition to the modifiers light and dark were recorded. The students were asked to record the fiber type and respective percentage of each garment as reflected on the garment label(s).

This data was compiled to observe the totality of each garment type, primary, secondary, and tertiary colors, and fiber type and percentage. Out of the 619 #1 upper garments, 347 were t-shirts; 541 or 87.4% stated cotton as the primary fiber type. Polyester and acrylic were the two other major fiber types with 6.0% and 2.4%, respectively. Color distribution was more even with the most frequent being white throughout primary, secondary, and tertiary colors. The #2 upper garments were also primarily t-shirts at 126 out of the 244 total shirts observed. The fabric distribution was nearly the same as upper garment #1, with cotton being the most prevalent followed by polyester and acrylic including a high frequency of white shirts. The bottom garments showed 398 out of the 620 were blue jeans, or denim. Primary fiber types show that cotton was 93.3% of the total fiber type among bottom garments. Polyester comes in next with 4.2% of the total primary fiber type. Blue was the most prevalent primary color of all bottom garments.

White cotton is the primary fabric type among the sampled group of college students; white cotton is often noted for its lack of specificity in fiber examinations. Excluding white cotton, polyester and acrylic in a variety of colors are the most prevalent. The frequency of fibers such as acetate, linen, and lyocel are non-existent in upper garments. Linen does not seem to be popular among the college students sampled. Fashion plays a large role in the fiber and fabric choices of this demographic and this influences the potential evidence available to forensic scientists whose casework involves college students in a temperate climate.

Fiber Analysis, Fabric Content, Fiber Distribution

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