



## B117 Could Have, Would Have, Should Have: The Utility of Trace Evidence

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After attending this presentation, attendees will understand the time and money-saving aspects of trace evidence examinations and why laboratories should retain trace evidence in their services portfolio

This presentation will encourage a greater awareness of the utility, significance, and benefits of trace evidence analysis

Non-DNA forensic disciplines, particularly trace evidence, have suffered from the persistent perception of their lack of scientific rigor. Traditionally dismissed as “could have” evidence, trace evidence examiners have generally lacked the resources that have become common to their DNA-oriented colleagues. This has led to a general weakening of the perception of the utility of trace evidence—even by trace evidence analysts themselves. A weak perception, the authors feel, leads to a weak analysis and a weaker interpretation.

Highlighting the most commonly voiced arguments against trace evidence, this paper will present counter-arguments, backed with model data, which emphasize the utility, and even the necessity, of trace evidence as an integral part of any forensic laboratory. Actual cases where no DNA was examined, the DNA was examined but was not suitable for analysis, or where a positive finding of DNA would not move the investigation forward (spousal sexual assault, for example) will be the most obvious starting point for this presentation. Additional cases that demonstrate the potential specificity and strength of trace evidence analysis will be discussed. Management issues will also be discussed showing how trace evidence can save a laboratory time and money.

For example, in three hypothetical cases involving hairs in three laboratories with differing sampling protocols, the laboratory employing microscopical hair examinations has a more efficient and cost-effective supply chain than laboratories that do not. Therefore, while hair examiners may be considered to be a “waste of time” by some laboratory managers, they, in fact, can save both time and money. Other actual and hypothetical examples will be discussed.

	Lab #1		Lab #2		Lab #3	
	Cost	Accuracy	Cost	Accuracy	Cost	Accuracy *
(\$1500 per sample for mtDNA)	Analyzes DNA on all Q hairs, plus all K samples		Only analyzes 2 hairs @ from victim's under-wear and SAK, plus all K samples		Only analyzes 1 hair after microscopical exam from each item, plus 2 K samples	
Small Case 2 positive/5 total 2 Known samples	\$10,500	5 in 5	\$9,000	4 in 5	\$6,000	9 in 10
Medium Case 5 positive/15 total 4 Known samples	\$36,000	20 in 20	\$12,000	4 in 20	\$9,000	9 in 10
Large Case 15 positive/50 total 6 Known samples	\$84,000	50 in 50	\$15,000	4 in 50	\$12,000	9 in 10

\* Based on results published in Houck, M.M. and Budowle, B. JFS, V47, N5, 2002.

### Trace Evidence, DNA, Management