



B74 The Efficacy of Sample Pre-Selection in High Volume DNA Analysis

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The goal of this presentation is to describe the benefits of identifying acceptable sample types for analysis, with high likelihoods of success in generating crime scene DNA profiles amenable for upload to the National DNA Databank, in a high-volume casework program.

This presentation will impact the forensic community and/or humanity by demonstrating the efficacy of sample selection in high volume casework and the success of obtaining DNA profiles from high-volume casework

Due to caseload pressures and the volume of break and enter occurrences, these cases have had a lower priority, in the forensic community, than more serious crimes. With the advent of the National DNA Databank (NDDB) in Canada and with a recent increase in trained staff, the Centre of Forensic Sciences (CFS) developed a program for the analysis of DNA break and enter cases where no suspect has been identified. The objective was to provide information that would assist investigations of this nature, where no other avenues existed.

When the program was launched in October 2001, only blood swabs were examined and only one swab per case was analysed. In August 2002, the program was expanded to include a greater range of sample types where DNA evidence stood to be recovered. This included a variety of samples such as cigarette butts, chewing gum, and swabs from discarded drinking containers.

As of July 2004, approximately 2500 cases had been processed. Approximately 62% of the samples submitted were blood swabs. Of the remaining cases, a significant proportion included swabs from drinking containers (19%), cigarette butts (15%), and other miscellaneous items (4%). This review summarizes the success rate in obtaining a DNA profile from the variety of samples tested, excluding blood.

The following results indicate the percentage of samples yielding a complete (AmpF/STR® Profiler Plus™ system) STR DNA profile: cigarette butts (94%), swabs of drink containers (66%), chewing gum (100%), worn clothing with no apparent body fluid samples (32%), and miscellaneous samples such as envelopes, hair, nasal samples, and scene swabs reportedly from saliva (63%).

The success of the program is exemplified by the proportion of samples yielding a profile suitable for upload to the National DNA Databank (i.e., a profile with at least 6 of 9 AMPF/STR® Profiler Plus™ loci). The data show that on average approximately 81% of the samples accepted generated DNA profiles that were uploaded, validating the acceptance criteria, with roughly 40% of the profiles uploaded generating hits to either the Crime Scene Index or Convicted Offender Index.

This casework initiative highlights the value of defining acceptance criteria based on the anticipated likelihood of success, whilst incorporating a rapid and efficient testing protocol.

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