



B74 Examination of Personal Effects as Reference Samples for Victims of a Mass Disaster

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The information in this presentation will serve as a guideline for collection and DNA extraction of victims' personal effects for DNA comparison in the event of a mass disaster.

During the recovery efforts following the World Trade Center attack on September 11, 2001, and the crash of American Airlines Flight 587 in Rockaway, Queens on November 12, 2001, a large number of personal effects were turned in to the OCME (Office of Chief Medical Examiner) to aid in DNA identifications. These items included those traditionally collected during mass disasters such as toothbrushes, hairbrushes, razors, and clothing. Testing on reference items from Flight 587 victims was performed at the OCME in New York City. Results indicate that the most successful samples (the best DNA sources based on the average number of STR loci reported) are toothbrushes, followed by razors, hairbrushes, and combs. While toothbrushes were an excellent source of DNA, in several instances, there appeared to be PCR inhibitors present in the extracts. The effects of different extraction and purification methods on this PCR inhibition will be discussed.

In addition, there were several unusual reference samples from World Trade Center disaster victims tested in-house. The samples were generally medical specimens received from diagnostic laboratories and hospitals and included 8 pap smears, 8 paraffin-embedded tissue biopsies, 2 semen samples, 1 DNA extract, 1 lyophilized DNA sample, 2 fingernail clippings, 1 set of (2) kidney stones, 2 serum samples, and 1 blood smear. Extraction procedures and treatment of these samples will be discussed. All of these medical specimens are valuable references since there is no question about the source of the DNA in the sample (barring any mix-ups at the hospital or laboratory). With other personal effects, a family member may inadvertently turn in a toothbrush or hairbrush which belongs to someone other than the victim. This type of mix-up was found, through kinship analysis, to have occurred with at least 3 toothbrushes during the identification process for American Airlines Flight 587. Additionally, DNA mixtures were detected on some personal effects, possibly because someone else in the household had shared the victim's hairbrush or toothbrush. Detection of mixtures was not an issue when medical specimens were used as references. The medical specimens also proved, with the exception of the kidney stones, to be a valuable source of DNA for STR testing. The information in this presentation will serve as a guideline for collection and DNA extraction of victims' personal effects for DNA comparison in the event of a mass disaster.

DNA, STR Testing, Mass Disasters