J7 Development of a Supplemental Technique to Increase Visualization of Handwriting Indentations in Crumpled Documents With the Use of an Electrostatic Detection Device (EDD)

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After attending this presentation, attendees will consider using one of the supplemental techniques discussed in the presentation when presented with a crumpled or problematic document in which an indentation examination is necessary.

This presentation will impact the forensic science community by providing additional research in solving one of the common problems in EDD examinations.

Forensic Document Examiners (FDEs) receive questioned documents in a wide variety of conditions: chemically processed, folded, crumpled, wet, frozen, charred, wadded, or a combination thereof. Subsequently, upon receipt of a damaged document, FDEs are given the opportunity and, through much field research, the means to "unfold" the document's secrets despite whatever state it may be in. Among the many examinations FDEs can employ, the application of an EDD is one of the key analyses performed on original questioned documents. These examinations have elicited superb information in the form of latent handwriting indentations as well as pattern impressions that may indicate a printing process which may otherwise have remained unseen; thus, the potential forensic information would not have been utilized. Crumpled or wadded documents have proven to be a problem in the area of EDD as the toner particles will typically adhere to the uneven and prominent creases and folds as opposed to the more subtle and delicate latent handwriting indentations or printing process impressions.

This research was designed to attempt to create a technique that would minimize the toner from adhering to the creases, thereby allowing the toner to potentially reach any of the latent indentations. The technique used two factors to attempt this: (1) increased humidity; and, (2) the application of a weight. These experimental factors were utilized separately and in combination on crumpled pieces of notebook paper containing latent handwriting impressions to determine their effects on an indentation examination. The crumpled papers were first examined with the EDD by applying the manufacturer's recommended procedure, then re-examined with the EDD after applying increased humidity, pressure, or a combination of both. Images of the results of each indentation examination were captured with a digital camera for documentation. Once all of the experimental procedures were completed, the images obtained were examined to determine whether or not the visualization of handwriting indentations improved. A score was applied to both the "before" and "after" images based on specific criteria. Applying a higher humidity to the documents prior to EDD processing did allow for visualization of more latent handwriting indentations in the crumpled papers than if one had followed the manufacturer's recommended procedure. A stretching technique was also attempted to see if this would cause any deleterious effects to the latent indentations. It was determined (using the guidelines followed in this research technique) that once a crumpled piece of paper had been exposed to increased humidity and then stretched by its edges, there was indeed an increased visualization of latent handwriting indentations with less interference from the creases and folds.

Indentation Recovery, Crumpled Document, Electrostatic Detection Device