



## Questioned Documents Section – 2006

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### J15 The Characterization of Envelopes for Questioned Document Examinations

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Attendees will be introduced to the evidentiary importance of envelopes and understand how physical and chemical examinations can be used to associate questioned or known documents, and determine if multiple documents have a common origin. Questioned document examiners will be provided with information regarding the feasibility and limitations of linking multiple questioned envelopes to a common source.

Envelopes can be associated with a variety of serious crimes, including sending mail that contains threatening correspondence, transmitting chemical and/or biological agents or controlled substances (drugs) through the mail, and the delivery of extortion or kidnapping demands. Oftentimes, forensic examiners are requested to conduct examinations on envelopes to associate questioned or known documents or to determine if multiple questioned documents have a common source. There are numerous physical examinations that can be conducted which include the size, shape, color, printed pattern, the placement and dimensions of adhesive strips, and the general format of the flaps and seals. Production markings (including repeating or transient defects) can also be examined as discriminating features from various batches of envelopes. Furthermore, chemical examinations can be performed on various components of an envelope to determine if there are commonalities that may link the sample with a comparable similar specimen(s).

The authors obtained several different types of envelopes from various retailers in the United States market and performed numerous examinations in an attempt to characterize and differentiate them based on their physical properties. The envelopes were also examined to determine if they had significant (diagnostic) defects in their printed patterns (when applicable), and in their construction, to identify possible class characteristics that could yield critical information during a criminal investigation. Finally, the authors will present some additional findings, including the date(s) of production changes and the introduction of new components, the chemical analysis of adhesives using Fourier transform-infrared (FT-IR) spectrometry and scanning electron microscopy coupled with energy dispersive X-ray analysis (SEM/EDXA), and the examination of markings or striations using an electrostatic detection device. Occasionally, envelopes may be traced to a manufacturer and its respective location, so the authors will attempt to ascertain whether this information can be valuable to investigators based on the distribution channels utilized by the various manufacturers.

#### **Questioned Documents, Envelopes, Threatening Letters**