



# Questioned Documents Section - 2015

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## J20 Another Look at Ink and Toner Intersections: A Word of Caution

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After attending this presentation, attendees will understand how to conduct an examination of the intersection of toner and ink on a paper substrate. Attendees will understand techniques that will assist in the intersection examination. Attendees will also understand that caution is needed when drawing conclusions from the examination of the intersection of the toner and ink.

This presentation will impact the forensic science community by serving as a “wake-up” call when drawing conclusions from the examination of ink and toner intersections. This presentation will impact examiners by making them more cautious when drawing conclusions in this type of examination.

Factors considered in an ink/toner intersection problem include the writing instrument, the paper substrate, and the writing surface. Different writing instruments will be discussed, including ballpoint, roller ball, gel pens, and felt tip/porous point pens and their effect on drawing any conclusions.

Is spectral reflectance from the ink a critical factor in arriving at a conclusion? Can spectral reflectance dissipate over an extended period of time, thus inhibiting the examination? Is the spectral reflectance phenomenon a critical factor in drawing any conclusions?

Other facts that are considered are the paper substrate and its effect on the ink/toner examination. Does that substrate affect the possibility of making any determination? A look at the effect of the writing surface is also a factor to be considered in this type of examination. This presentation will look at the factors needed to make a definitive conclusion as to the sequence of the ink over toner or toner over ink. Examiners may be “tricked” by the observations they make. Can the luminescent properties in the ink assist in making the sequence determination?

These types of examinations are critical in cases where a document has been called into question as to whether an addition has been made to the document after it has been signed. If there is no toner/ink intersection, it is very difficult to make any determination. If the toner and ink has intersected, some conclusions may be drawn as to which came first, the ink or the toner. In most cases, where the toner lies over the ink, this may be a significant factor in determining if the document has been altered. If the toner shows evidence of being crushed by the trough of the pen, this may be evidence of the toner being present when the document was signed.

In conclusion, this presentation will look at what evidence should be present to make any definitive conclusion and whether spectral reflectance and any presence of luminescent properties in the ink are needed to make any determination.

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### Intersections, Sequencing, Toner