B22 Validation of Various Fingerprint Processes in a Medium-Size Municipal Laboratory

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After attending this presentation, attendees will better understand the processes for validating fingerprint methods for a medium-sized municipal laboratory while trying to complete the quality requirements necessary to achieve the International Organization for Standardization (ISO) accreditation.

This presentation will impact the forensic science community by providing a benefit for the Huntington Police Department Forensic Investigations Unit (HPD FIU) that will lay the foundation for the laboratory's workflow and the product it generates.

According to the 2009 National Academy of Sciences Report, Recommendation 7, laboratory accreditation should be mandatory and follow the standards published by the ISO. There are many different types of methods utilized to visualize latent prints, and they all need to be tested in order to see which is best suited for the HPD FIU.

This project includes non-porous, porous, adhesive, and blood processes, with many different methods for each process. Each process must be used in the proper sequence of a series of development techniques or risk the possibility of destroying certain matrix components that react with subsequent processes. If one method is performed out of order, the fingerprints could be underdeveloped or even destroyed. The HPD FIU has to be very careful in order to preserve a possible fingerprint and allow it to be detected. Validating these methods allows the HPD FIU to know if the method works for its intended use or if there is another that is better suited.

Validations of fingerprinting processes and methods will allow this medium-sized municipal laboratory to become accredited through ISO 17020 standards. Five data sets were generated for each method and results were evaluated based on the method's ability to be visualized. A result of a positive (able to see ridge detail) or a negative was noted for each to ascertain if any ridge detail was seen. To offer proof that these tests function accordingly or produce inadequate results, pictures or possible prints were kept in order to be accredited through the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) by the ISO 17020 for crime scene response.

Three validations were to be produced for each method, but unforeseen circumstances developed. Unfortunately, the unit lost some employees, resulting in a problem getting tests validated twice more in a timely fashion, due to casework. Once the two other validations are completed, those results will create a new decision as to whether or not the methods are valid to use in this laboratory.

Additionally, new methods were tested and validated for implementation in the workflow of the medium municipal laboratory. Some of the new methods, such as 1,2-indanedione and acid fuchsin, are now validated for utilization in the laboratory. The saying, "You always get the good with the bad," came into play here, as there were four methods that were found to be no longer useful for this laboratory, which will save the laboratory money. These methods include Coomassie Blue, 5-MTN, ThermaNin, and Oil Red O. D.F.O did not work well either, but future use is being evaluated by the laboratory.

Nearly all of the fingerprint methods produced results that were expected. The few that did not meet expectations were D.F.O., 5-MTN, Oil Red O, and ThermaNin; however, 5-MTN, Oil Red O, and ThermaNin were new products to this laboratory and did not produce the results the products' manufacturers stated they would. The validation of these methods helped the HPD FIU in the accreditation process as well as discovering which methods produce better results.

These and other details of the study will be discussed.

Fingerprints, Validation, Accreditation